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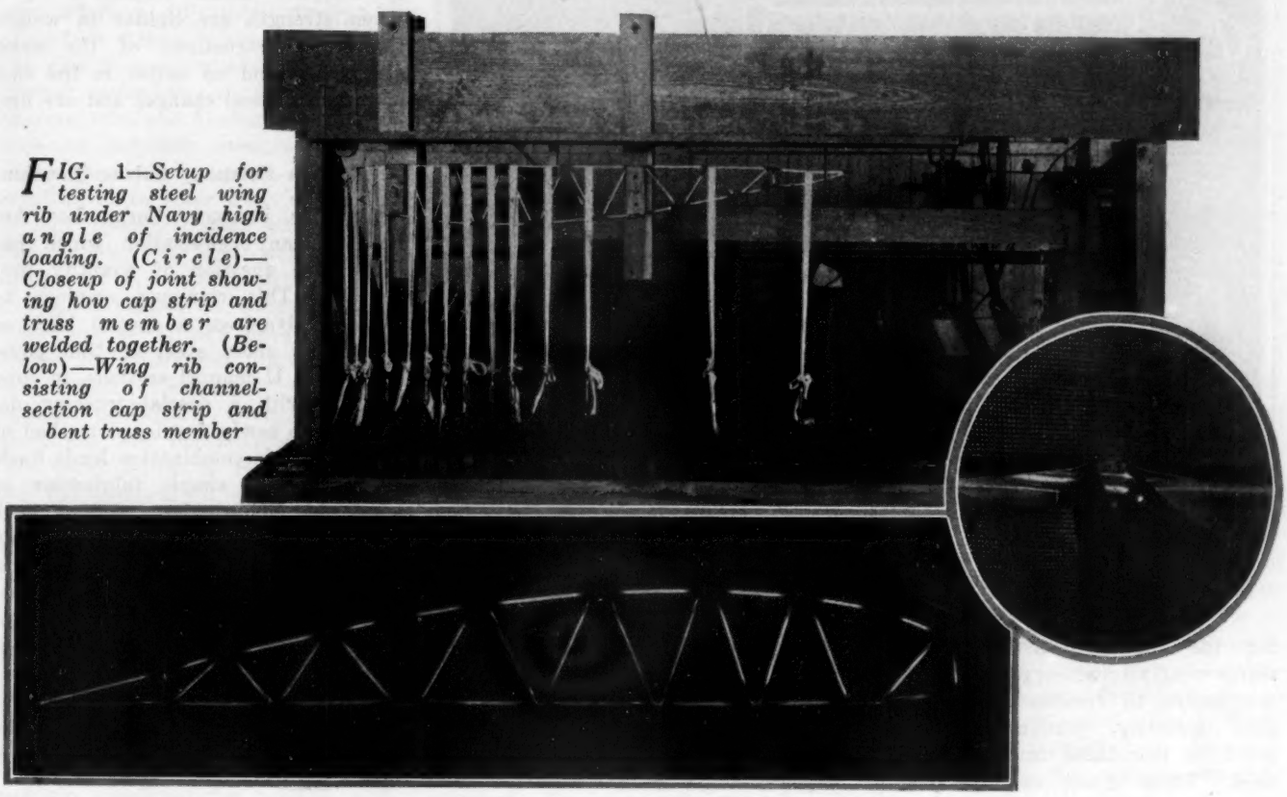


FIG. 1—Setup for testing steel wing rib under Navy high angle of incidence loading. (Circle)—Closeup of joint showing how cap strip and truss member are welded together. (Below)—Wing rib consisting of channel-section cap strip and bent truss member

Specialized Manufacture of Parts Aids Small Airplane Builder

Wing Ribs, Compression Members, Ailerons, Tail Surfaces, Bulkheads, Spars and Other Metal Airplane Parts Built by Specialized Manufacturing Methods for Small Producer

A GREAT paradox in current airplane manufacture has lain in the fact that while airplane manufacture was on the threshold of real mass production as the automobile industry knows it, the total number of organizations manufacturing airplanes was far in excess of the number manufacturing automobiles, and was being augmented almost daily. To keen financial observers of the industry this appeared to lead to but one eventuality—a devastating survival of the fittest. The demand always has been in excess of the supply, but increased diversification of manufacturing sources appeared to be defeating the only ultimate solution of the problem of meeting the demand—real quantity production methods having maximum efficiency.

While undoubtedly there were other considerations, one of the paramount motivating reasons

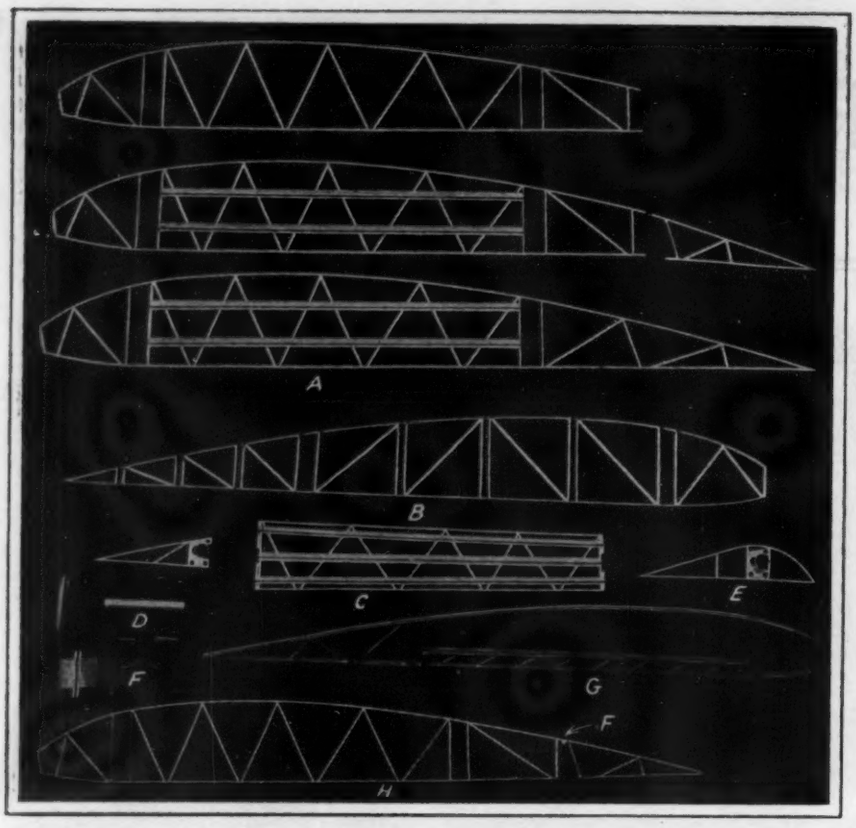


Fig. 2—Wing rib trusses and various component and auxiliary steel stampings and rolled shapes, products of specialized manufacture

for the current consolidations and mergers of aircraft organizations was the desire to combine resources so that quantity production methods could be introduced into the aircraft field. These great combinations of financial resources, engineering skill and production facilities certainly provided the *modus operandi* for the advent of mass production methods.

Mergers Aid Production Problems

That these mergers provided one plausible answer to the problem of how genuine quantity production might be attained, stands unchallenged. To those organizations which were fortunate enough to become one of the links of these great combinations, the problem appeared to be solved; and now basic specialized manufacture has entered the field to provide the benefits to be gained by quantity production methods for even the smallest airplane producer.

Although specialized manufacture has been available for many years in the form of standard parts, screw machine products, accessories, etc., and more recently in the form of tanks, floats, cowling, etc., even these did not provide the necessary assurance for the continued success of the small airplane manufacturer, once quantity production methods were developed by larger competitors. Specialized manufacturers have contributed greatly to the current rapid expansion of the aircraft industry, and will continue to serve it with increasing significance. But even beyond their capacity to serve, exists an insistent need for the application of modern production methods and facilities to the structure of the airplane itself.

The development of extruded duralumin shapes, bulb angle sections, etc., has provided a distinct step in the right direction, but the final ultimate assurance of the indefinitely continued success of all aircraft manufacturers, and particularly of the now small independent organization, has been provided by the entrance into the specialized manufacturing field of two large organizations providing steel wing ribs and other structural units completely fabricated by progressive manufacturing methods and in conformance with particular requirements of the individual designer.

This latest development in aeronautical activity assures material economies being effected by undertaking large-scale production of certain structural units within a single factory, much as such methods have been found practical in certain phases of the automotive industry, where the specialized builder is the backbone of the industry.

Now that the aircraft industry has grown to a size that demands mass production, experienced manufacturing engineers are seeking ways and means to employ metal construction. The reasons are obvious; metal is always available in almost any form desired, it is more economical and easier to handle than wood, and its quality and performance can be predetermined accurately by testing. Finally, properly designed metal structures of a given strength are lighter in weight than wood structures of the same strength, stand up better in the face of meteorological changes and are fireproof.

California Company Solves Question

Aerotrus Products Corp., Los Angeles, is an organization which has solved the question of quantity production. This company employs to marked advantage a special high or low-carbon sheet steel of thin gage, rolled into U-channel sections, in combination with a special trussing design and a newly developed method of brazing. This combination lends itself readily to the simple fabrication of wing ribs, compression members, such as shown in Fig. 2-C, ailerons, tail surfaces, fuselage fairing, bulkheads, spars, etc. The same structural engineering principles employed in these products are extended to the various designs used by the aircraft manufacturers, without complicated dies and waste materials, and in full conformance to their respective requirements.

The strength-weight ratio of this truss design is much higher than that of the conventional wood structure, and corrosion is eliminated by the use of stainless steel, or by cadmium processing after assembly, if cold-rolled steel is used. The ease and inherent strength ratio in this method of fabrication affords a simple solution to many of the production problems so general in the use of wood, and of some metals. This construction is not affected adversely by vibration. Government tests have proved the brazed joints to develop the full strength of the metal even after being subjected to 2850 vibrations per minute for more than 48 hours.

A feature of the design is the web structure which is stamped, nicked, and folded by machine, and is a single piece of channel midway between openings. This web or trussing, Fig. 3-C, inserts or straddles the cap strip, whichever the case might be, and is brazed securely at each contact point. The braze is accomplished by a low temperature heat momentarily applied, and since the

maximum brazing temperature used is 1000 degrees Fahr., it has been found that this process has a negligible effect on the material, even where the gage runs as low as 0.010-inch. A special formula bronze that melts at exactly the right temperature of the torch and metal being joined, is used for this process.

Metal Combined with Wood

In addition to the ordinary U-channel, a flange type channel, Fig. 3-D, also is used to advantage. This channel assembles in perfect combination with the U-channel and provides an excellent medium of combining the truss structure to a wood structure or to other truss units, such as spar openings, walk ribs, leading edge molding and tank openings. An instance of this combination is shown in Fig. 4, part of a wing assembly. Other special fittings have been developed to standardize the assembled construction. Simplicity and economical production even in small quantities, are outstanding features. This construction is repaired easily, and the removal of certain sections without disturbing the structure itself may be accomplished in many cases.

Most of the equipment used in the manufacture of these truss products is designed for ready adaptation to diversified structural designs and quick setup. The several different sizes and designs of channels are folded in a special mill, and power presses with adjustable, automatic feed are employed for cutting, nicking, punching, and stamping. Special forming rolls, quickly set for the different curves and members, as well as master dies are used for many forming operations. The structure is assembled and brazed in adjustable steel jigs that are quickly set up to conform with the various designs, while the brazing is accomplished by other special equipment.

Trussed metal wing ribs develop an exceptionally high strength-weight ratio and conform to army, navy, and department of commerce requirements. These ribs are built up to the airplane manufacturer's dimensions and load specifications for either wood or metal spar, and include compression ribs, walk ribs, center section tank ribs, butt ribs, and primary and secondary aileron ribs. A popular feature of the primary and secondary aileron ribs, Fig. 2-H, is the hinge, Fig. 2-F, brazed to the cap strip, which permits a light and substantial plywood or metal finish with the required strength. The walk ribs are built up with flange cap strips for plywood cover, and flange uprights for attaching to

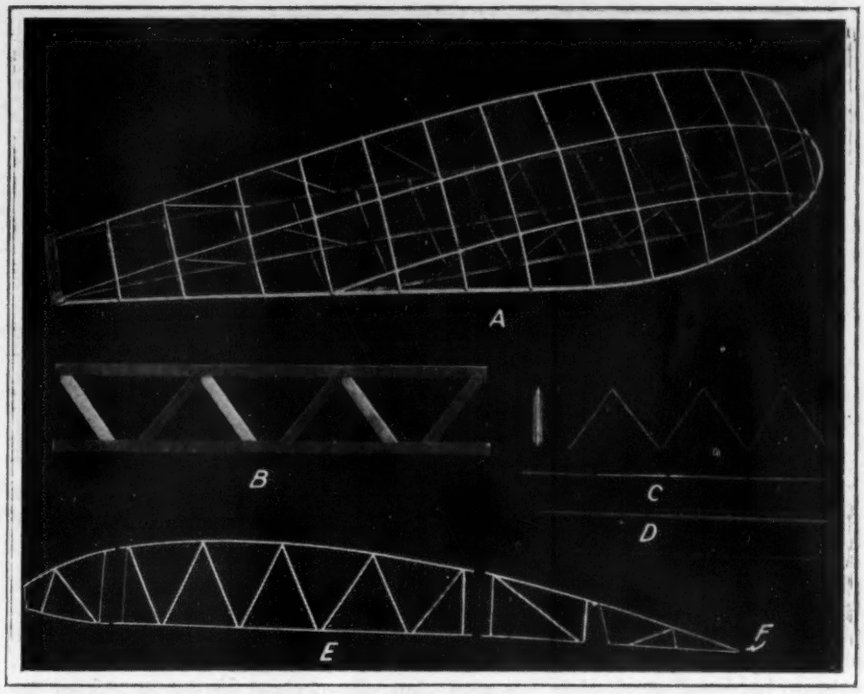


Fig. 3—Wing tip, metal spar and three-piece wing rib truss. U-channels and flange channels are used to equal advantage

spars and stringers. Center section tank ribs, Fig. 2-G, are built up in several designs, double trussed, either top or bottom, with flange-type or U-channel cap strips. The upper portion of the center section of these ribs is usually hinged to allow easy removal of tanks. Compression ribs, Fig. 2-A, are light with a maximum strength. Compression strength is attained through longitudinal channels attached midway between spar openings, and to each diagonal truss member. Allowance is made for drag wire fittings in the spar opening.

An original feature of these metal wings ribs is the three-piece rib, Fig. 3-E. After assembling the complete rib, the upper and lower cap strips are cut on the center line of spar opening. A light metal cap overlaps the opening and locks the two members together. This construction permits the removal of either the leading edge or nose section, center or trailing edge section without disturbing the balance of assembly.

A special stamping, Fig. 3-F, attached to the trailing edge of each rib provides a substantial fastening for the metal V trailing edge, Fig. 2-D, and is locked securely in place by a wire key. Butt ribs, Fig. 2-B, are built up similarly to the walk ribs, except that they provide for a light plywood facing, firmly attached to the upper and lower cap strips and spar flange. This plywood facing affords an ideal surface for tacking where fabric covering is used.

Frise-type ailerons, Fig. 2-E, are built of standard design in several sizes for a majority of the popular airfoils. Wing tips, Fig. 3-A, of standard design for Clark Y-type and Gottengen 398-type airfoils of prevailing chords, are popular products and special wing tips in accordane with the manufacturer's design also may be obtained. Metal spars, Fig. 3-B, are developed in strict accordance with the requirements of the particular airplanes, and the strength-weight ratio compares with that of spruce. A special type of metal covering for wing panels and fuselage, is another achievement. This, too, is produced in accordance with the manufacturer's particular requirements.

Subjected to Extensive Tests

This new type of truss member was developed after extensive experimentation and research in the matter of materials and equipment to produce a practical structure at a reasonable cost. As an indication of its intrinsic merit, the test results may be cited on a Clark Y-type rib of 5-foot chord of the following characteristics:

Maximum depth—7½ inches.
Weight—7.74 ounces.
Size of channel cap strip—$\frac{1}{8}$ x $\frac{3}{8}$ x 0.015-inch steel.
Trussing—$\frac{1}{8}$ x $\frac{3}{8}$ x 0.010-inch steel.
Center to center of spar—30 inches.
Nose to center of front spar—8 inches.
Center rear spar to trailing edge—22 inches.
This rib was mounted loosely on

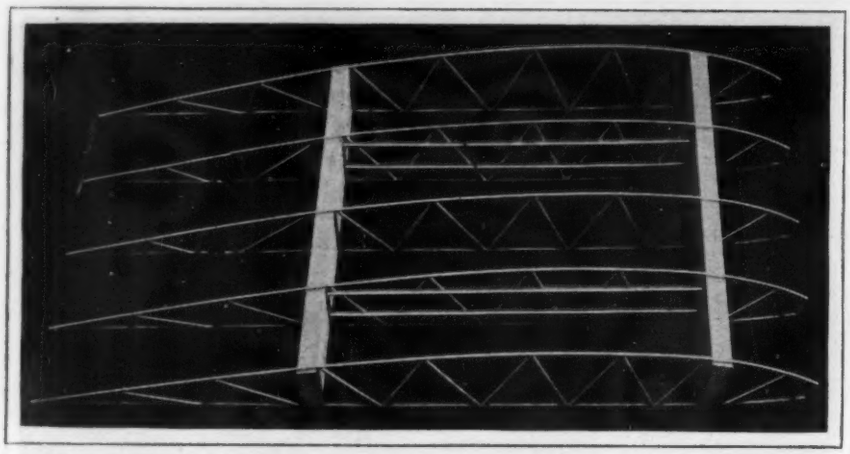


Fig. 4—Metal wing rib trusses combined with wood strips in a partial wing structure assembly. Note the reinforcing on two of the ribs

false spars and subjected to 2850 vibrations per minute for a period of 48 hours. A deflection of 1/64 inch at each vibration was applied directly onto a hardened steel plate clamped to the lower cap strip. Immediately after this test was completed, a thorough inspection of the rib disclosed no crystallization or other failures. This same rib, under a static load test of 440 pounds, Navy high-incidence loading, showed a deflection of $\frac{3}{16}$-inch without any failures. After the load was lifted, the rib came back almost to its normal shape. At this loading, a strength-weight ratio of 56.8 was maintained without failure.

Wing Rib Is Spot Welded

Another established concern to recognize the trend in aircraft development is the Edward G. Budd Mfg. Co., Philadelphia. This company's laboratories have developed a number of interesting aircraft structures, probably the first of which to reach the market will be a wing-rib of unique design, shown in Fig. 1. This rib, made up primarily of steel channel section, has the cap strips and truss members joined by electric spot-welding.

The use of thin-gage steel sheets, especially in a welded condition, heretofore has not found favor in aircraft development. Recognition of this occasioned considerable research on the part of the Budd company engineers. A steel was found which had the desired characteristics. It is noncorrosive and can be dieformed; tensile strength is 200,000 pounds per square inch and the steel is susceptible to electric welding without selective corrosion or weakness.

Successful welding, and in aircraft structure that means 100 per cent, depends largely on a definite knowledge of the art as well as having a structure adapted to its application. This accounts for the rather unconventional design of the rib. At each juncture of cap strip and truss member, the channel section is flatted for ½-inch. Four welds join the flats. The structural weakness which otherwise would be occasioned by reduction of the channel to a flat strip is overcome by a central, longitudinal bead in the cap strip and a diesunk knee formation in the bend of the truss member.

A rib having a 60-inch chord and weighing 0.473 pounds has been tested repeatedly under the Navy high angle of incidence loading to ten loads of 565 pounds without permanent set. The setup for this test is shown in Fig. 1. Salt spray tests show no corrosion of welds. Two strips of metal ⅝-inch wide and 0.012-inch thick, joined by a pair of spot welds, sustained a shear load of 1265 pounds. A number of ribs after having negotiated static tests to failure were put through a scrap bailer. Upon being straightened out, it was found that no weld had failed nor had the metal torn.

The foregoing structural products offer a great variety of practical uses and come to the aircraft manufacturer ready for final assembly, thereby eliminating much expensive equipment, overhead and troublesome details. This highly specialized manufacturing setup offers a more practicable opportunity for the aircraft industry to purchase its requirements through reliable sources on a more economical basis. It is believed that this marks a significant step in the march of aeronautical progress toward quantity production.

New Standard Available

A draft of the proposed American standard for cut and ground thread taps now is available for review and criticism through the American Standards association, 29 West Thirty-ninth street, New York. The draft covers machine screw, end, tapper, nut and pulley taps. Standard tolerances on all dimensions are included. Important features of the standard are the adoption of larger major diameters to allow for greater wear, increase in minimum pitch diameters on cut thread taps over ¾-inch in diameter to compensate for lead error, adoption of a comprehensive standard for ground thread taps, and standardization of a number of elements not covered heretofore.

Power Factor Problems Solved Graphically

A new graphic system of solving power factor problems has been devised by the General Electric Co., Schenectady, N. Y., the method consisting of laying down to scale the known factors and then scaling the unknowns. The system is described in detail in a new publication entitled "Solving Power Factor Problems by Scale."

Heretofore the calculations relating to power factor and its improvement have been difficult for those vitally interested, and at best did not visualize the conditions that might result from better treatment. All that is needed in the graphic system is a scale, a pencil and paper. A right-angle triangle with the sides in proportion 3 to 4 to 5 is furnished with the booklet and this with a small T-square save time in the calculations and make the work more accurate.

Booklet Reviews Welded Piping Systems

Adaptation of the oxyacetylene process to the fabrication of steel and wrought-iron piping systems is discussed in a new booklet published by the Linde Air Products Co., New York, entitled "Oxwelded Construction for Modern Piping Services." This 78-page booklet presents all available facts pertinent to the use of this process, and discusses the factors governing its choice for piping systems.

Three chapters cover the field in general while five additional chapters are devoted to particular fields of piping construction. The whole publication is profusely illustrated showing methods of making the joints, previous installations, and unusual applications of the oxyacetylene process.

The first mechanical wire mill proper was erected in England at Sheen, near Richmond, Surrey, in 1663.

America's Surplus Scrap Supplies Europe and Orient

Tonnage Too Far from Domestic Steelmaking Areas To Possess Value Moves by Water to Nations Lacking Material

By J. Joseph W. Palmer

Iron and Steel Division, Department of Commerce

BY VIRTUE of the already extensive and still growing use of scrap in the production of pig iron and crude steel throughout the world and because supplies of that commodity in many areas are distinctly limited the United States has risen to a paramount position in the world's trade in this one-time largely waste material. No other country is possessed of such large supplies of scrap available for export and no other country today sells as much of it in foreign markets. In the foreign trade of the United States in iron and steel products it is, on the basis of the tonnage shipped, easily the leading item, a rank to which it has risen in the last two years.

Shipments in 1929 reached 552,372 gross tons, 36,233 tons more than in 1928, moving through 31 of the customs districts of the United States to a total of 31 consuming markets. The volume of shipments fluctuated considerably, varying between 21,552 tons in February and 62,857 tons in August. The changes were so frequent as to make impossible the determination of any definite trend, although the closing months were marked by relatively higher stability.

Scrap Is Largest Export Item

As has been noted, the tonnage represented the largest item in the 1929 export trade, a matter of 18.25 per cent of the total, but the value represented by these shipments, $7,721,393, amounted to only 3.9 per cent of the total value of the United States export trade in iron and steel products. The average value per ton in 1929 was 13.98 against $66.10 per ton for all classes of products entering into the export trade, increases in each instance from the 1928 averages of $12.82 and $62.78.

While it is impossible to determine in just what area a given shipment of scrap originated it is possible to approximate this by a study of the customs districts through which the scrap moved on its way to the foreign purchaser. Prices brought by scrap in export trade are not such as to permit of its being moved a great distance before it is loaded on shipboard and it is this factor which points to the probable locations from which the export scrap is drawn.

Scrap a World Factor

BECAUSE iron and steel scrap possesses value in direct ratio to its nearness to the point of utilization, in a country of great distances like the United States a great tonnage is produced too far from melting centers to be available for shipment. Freight rates preclude its competition with other steelmaking materials.

With water transportation much cheaper than by rail these tonnages are exported to countries deficient in iron ore, such as Japan, Italy and Poland. This factor neutralizes the matter of distance, which operates against rail hauls.

In the accompanying analysis of the scrap export situation the department of commerce demonstrates that the half million tons exported in 1929 was from a reserve unavailable to domestic melters by reason of its location geographically. Its availability for export gave it value otherwise non-existent. Thus the export tonnage is withdrawn without effect on the price or supply of material for domestic use.

Analysis of the 1929 trade revealed that of the total of 46 customs districts into which the United States and its non-contiguous territories of Hawaii, Alaska and Porto Rico are divided, 31 participated to some extent in the scrap trade, the tonnages handled varying from the single ton dispatched to Mexico through the El Paso district to the 123,779 tons which moved through Galveston. Sixteen customs districts comprise the Atlantic and Gulf coasts, 13 of which handled some scrap in the course of its movement to foreign purchasers. The entire Pacific coast area engaged in this trade, as did each of the three non-contiguous territories, while nine of the 12 districts along the Canadian border report shipments. The inland districts are conspicuously absent from this analysis, but here we are met with an example of the limiting effect of transportation charges on the scrap export trade.

Shipments Are Segregated

If, for convenience, shipments of scrap from the several customs districts are segregated into unit-districts on the basis of their approximate location it will be found that shipments from the Gulf area, composed of the Mobile, New Orleans, Sabine, and Galveston districts, at 202,313 tons, exceeded those of any other area. Galveston, with a total of 123,779 tons, led the ports of this area, shipping scrap to eight countries including such leading markets as Japan, Italy, Poland and Germany. New Orleans, the second port, with a total of 52,139 tons, shipped scrap to nine countries, while Mobile and Sabine, with totals of 4940 tons and 21,455 tons, respectively, supplied four countries each. With the exception of Mobile, which is adjacent to the blast furnaces and steel mills of Alabama,

the ports of this area draw their supplies from territories which do not support any major part of the national iron and steel industry so that the attention paid export markets by the scrap dealers of this area is quite to be expected, especially in view of the excellent port facilities.

The neighboring South Atlantic area, comprising the Virginia, North Carolina (from which there were no shipments in 1929), South Carolina, Georgia, and Florida districts, was the second largest exporter of scrap, with shipments totaling 120,719 tons. Florida, with exports amounting to 54,930 tons, shipped to six countries, including Japan, Italy, Poland and Germany. Virginia, with shipments of 40,614 tons, also traded with six countries, concentrating her interest especially on the Japanese market. Shipments through Georgia totaled 15,276 tons and those through South Carolina 9899 tons, the trade of each being almost as extensive as that of the leading ports in point of countries served.

Shipments from the northeastern area total 83,241 tons. Exports from Massachusetts, which went principally to Poland, totaled 31,362 tons and easily exceeded those from all the other districts of the area. The trade moving out of New York amounted to 15,407 tons with most of the shipments going to Japan and Poland, while that from Buffalo totaled 15,017 tons, all of which found its way to Canada. The 14,034 tons shipped from Vermont also found their way to Canada, as did the 1763 tons from the Maine and New Hampshire district.

Pacific Coast Shipments Large

All four districts of the Pacific coast contributed to its 49,736-ton total, the 17,549 tons which moved through the Washington district going almost entirely to Japan and Canada. San Francisco nearly equaled the Washington shipments with a total of 16,136 tons, Japan again being a leading market, with China second. Shipments from Oregon, 10,817 tons, and from Los Angeles, 5234 tons, followed much the same channels as did those from San Francisco.

The trade of the Southwestern area, 7473 tons, composed of shipments from the San Antonio, El Paso, and Arizona customs districts, was entirely with Mexico, the first named district being the most important.

Shipments of scrap to non-American markets from the three non-contiguous territories of Alaska, Hawaii and Porto Rico totaled 12,008 tons in 1929. These three areas, which are without iron and industries and which support only a relatively small number of foundries, blacksmith shops and similar enterprises, are quite natural participants in the export trade in scrap. The Far Eastern markets were, as might be expected, the principal purchasers of the scrap of the two Pacific areas, while most of the scrap from Porto Rico went to Poland.

Japan Is Largest Scrap Purchaser

Japan was the largest purchaser of American scrap in 1929, increasing her takings 47,833 tons to total 208,260 tons, nearly 38 per cent of all the scrap exported. Virtually all sections of the country participated in supplying this tonnage, including two non-contiguous territories, slightly more than one-half the total being shipped through the four customs districts of the Gulf area.

Japan occupies a peculiar position as a steel producer and it is due to this position that her consumption of scrap increased. The Japanese domestic supplies of iron ore are limited and of comparatively low grade and she is forced to depend on sources on the mainland of Asia. China is of distinct importance as a supplier. The unsettled conditions obtaining in China have virtually eliminated ore from that source and, as the demand for and production of steel in Japan is increasing, the Japanese industry has been forced to depend on iron and steel scrap to make up an increasing proportion of the furnace charge.

Shipments of scrap to Canada dropped in 1929, declining rather sharply in the last three months. Exports to this market totaled 111,849 tons, 66,679 tons less than in the year before. It should be noted, however, that in point of volume the 1928 trade of 178,524 tons was itself exceptional as the trade had amounted to only 92,514 tons in 1927 and to 66,212 tons in 1926. The 111,849 tons sent Canada in 1929 moved through the northern customs districts, principally those actually bordering on the country itself. The largest tonnage, 74,774 tons, was recorded by the Michigan district and with the 15,017 tons shipped through Buffalo and the 14,034 tons through the Vermont district made most of the tonnage to Canada.

Italy, third largest purchaser of American scrap in point of tonnage and the largest buyer on the Continent, increased its takings in 1929 by 14,515 tons to a total of 87,863 tons. This increase, and in fact the whole trade with Italy in this commodity, arises from the fact that Italy is virtually without deposits of iron ore and that the only deposits under national control, those on the island of Elba, are limited and are being reserved for use in time of emergency. Consequently Italy is forced to depend on foreign sources for most of its iron ore on non-national sources and upon scrap to make up the furnace charge. Virtually every European country has either established definite embargoes on exportation of scrap or limited the tonnage so that Italy is forced to look elsewhere. More than one-half of the total trade in 1929, 44,989 tons, moved through New Orleans, with an additional 20,461 tons from Galveston.

The trade with Poland amounted to 75,031 tons, 11,757 tons more than in 1928. The trade with this market arises from much the same circumstances as does that of Italy save that in the case of Poland it is the low quality of the iron ore available which forced her to look elsewhere for her supplies of ore as well as for scrap to supplement it.

Chemical Society Awards Nicholas Medal

Dr. Samuel Edward Sheppard, assistant director, research department, Eastman Kodak Co., Rochester, N. Y., has been awarded the William H. Nicholas medal of the New York section of the American Chemical society for 1930. The award, bestowed for outstanding achievement in the chemistry of photography, will be presented to Dr. Sheppard at a joint meeting of the American Chemical society, the Society of Chemical Industry, the Societe de Chimie Industrielle, and the American Electrochemical society March 14, at the Chemists' club, New York. Upon this occasion Dr. Sheppard will deliver an address on "The Reactions of Photographic Material to Light."

Langmuir Is Medalist

Dr. Irving Langmuir, associate director of the research laboratory, General Electric Co., Schenectady, N. Y., and recipient of numerous honors for achievement in the field of chemical science, will receive the Willard Gibbs gold medal of the Chicago section of the American Chemical society for 1930, according to announcement made by Dr. W. V. Evans of Northwestern university, chairman of the Chicago section. The award is made annually to a scientist whose work in either pure or applied chemistry has received world-wide recognition.

Razor Parts Gold Plated at Rate of 100,000 a Day

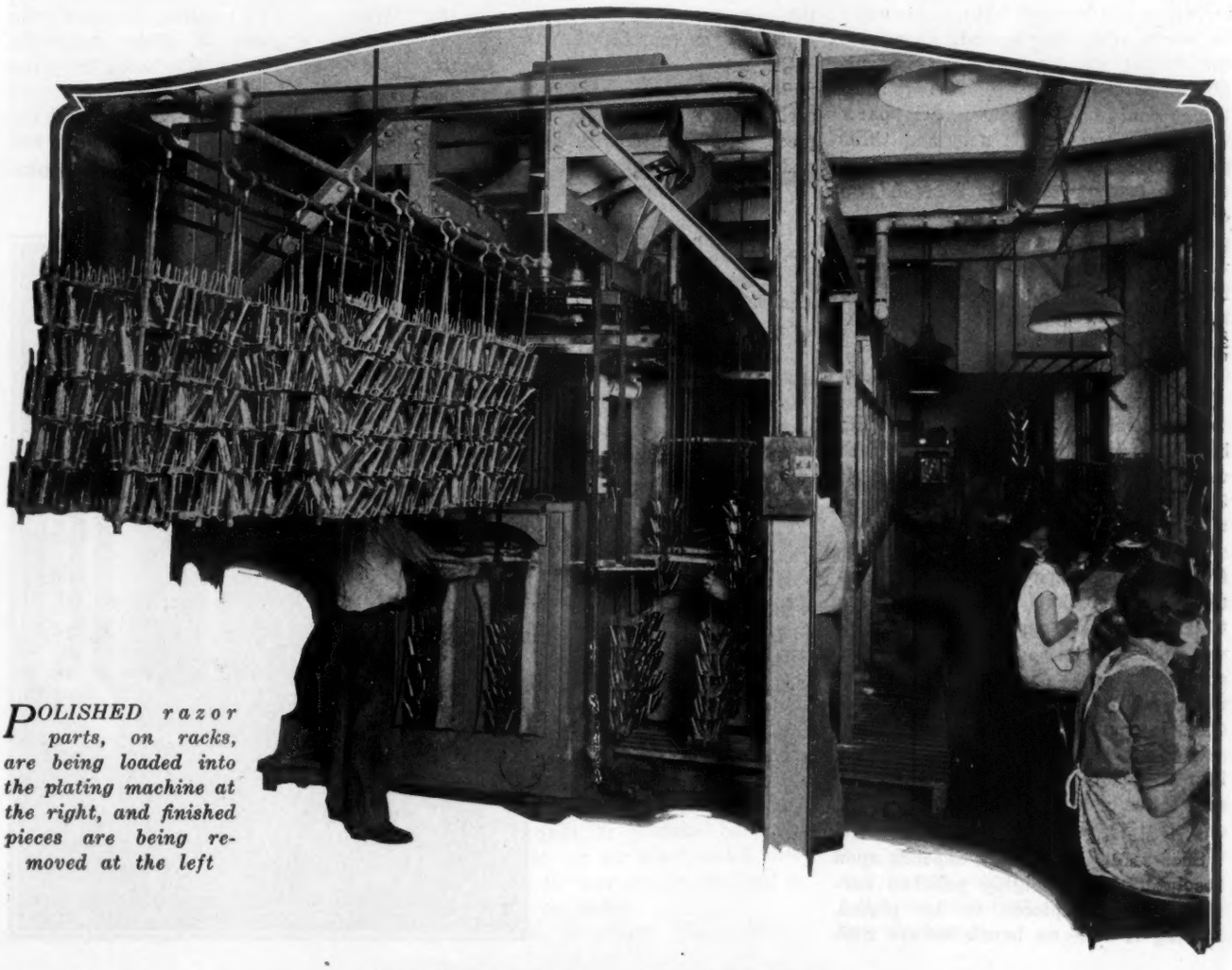
Thorough Grinding, Polishing, Cleaning and Drying Treatments Precede Plating—Pieces Go Through Series of Dips, Rinses and Gold Solutions

By H. R. Simonds

Associate Editor, Iron Trade Review

FROM a laborious and expensive hand process, gold plating has been raised to a production operation and now takes its place in industry as a standard method of finishing small parts. The recent installation of new equipment in the plant of the American Safety Razor Co., Brooklyn, N. Y., has increased the capacity of the gold plating department to 100,000 pieces, cleaned, plated and polished in a day. This plating is done for the most part on brass, but the process is equally applicable to other metals. Razor frames are put through the plating process at the rate of 10,000 to 12,000 an hour. The procedure in this process is typical of other plating methods.

In the stamping department sheet brass is transformed rapidly into frame stampings under high-speed semiautomatic presses. The parts fall from the presses into tote boxes at the rear and these are collected and taken to the acid cleaning department. This department is partitioned off from the rest of the plant and is provided with hoods and suction pumps to carry the fumes away from the operators. The first operation is a 20-minute immersion in warm dilute soda solution. This is followed by



POLISHED razor parts, on racks, are being loaded into the plating machine at the right, and finished pieces are being removed at the left

A side view of the gold plating machine showing the parts in process. To the left may be seen the control instrument board

rinsing in clean water after which the parts are ready for the acid dip. The parts are dumped into open aluminum wire baskets and dipped in two consecutive acid baths. The first, known as the burn-off bath, is stronger in nitric acid; the second, known as the bright dip, is stronger in sulphuric acid. Both are strong solutions containing about four parts water, one part nitric acid and three parts sulphuric acid. The duration of the dip is approximately 2 seconds in each bath and after the dip the pieces are washed in clear running water. Evidence of the strength of the acid dip is seen in the reddish tinge which the pieces assume as they are washed in water.

Sawdust Used to Remove Water

The pieces leave the acid dip bright and clean, but covered with water which must be removed. This is done with warm sawdust on a vibrating screen. The sawdust is shoveled onto the screen with the frames and drops through perforations in the bottom of the screen to a belt which carries it back to a warm air drying oven where it is conditioned for further use. The razor frame pieces, which have been dried by contact with the sawdust, are dumped out of the screen trays into a second set of tote boxes and are taken on trucks to the buffing and plating department.

Successful gold plating depends upon absolutely clean, highly polished surfaces of the pieces to be plated. Buffing is done on bench buffers with tripoli brick and XXX rouge at rate of 6000 pieces a day by each operator. This particular operation in the sequence is known as cut and color. It is piece work and includes placing the pieces in trays for transfer to the plating department.

On receipt in the plating department, the pieces are inspected by girls sitting at a long bench. The pieces are handled with special gloves and soft cloths to avoid spoiling the polish. After inspection the parts are hung on racks, ready for the plating machine. The filled racks are transferred from the inspection bench to storage hangers just in front of the big plating machine, shown in an accompanying illustration.

Two men operate the plating machine, otherwise completely automatic. One man takes the filled racks and places them on the traveler arm of the machine. The racks travel slowly along until picked up by a cam-operated device which lifts them over the edge of and into the first tank, containing a potash bath solution. Thermostatic control holds the temperature at 160 degrees Fahr. The pieces travel slowly from one side of the tank to the other, and then are lifted out of the tank automatically and lowered into the succeeding tank. This cycle continues throughout the series of tanks. The time of immersion in the potash bath is 5 minutes. The second bath is a warm water rinse, and the tank is long enough to permit the pieces to travel for 18 seconds before being lifted out of it at the far end.

Work Travels on Overhead Trolley

The method of operation of this large plating machine follows the general practice of other automatic plating machines. The work in process travels in a loop on an overhead trolley. The normal position of the pieces is such that all are immersed in the liquid of the tanks.

RACKS carrying the pieces to be plated are lifted over the edge of the tank by a special cam control lever, shown at the top of the illustration

The arrangement of pieces on the rack gives a uniformly distributed group which is moved slowly along through the various solutions. In gold plating, the cleansing operations are unusually thorough and the entire machine is enclosed in glass to keep dust particles in the air from settling on the work.

Electric Cleaner Used

The third tank in the process is known as an electric cleaner. Here the pieces are immersed for 4½ minutes in a solution which has a direct current of 9 volts passing through it. Immediately after this is a second electric cleaner operated by direct current at 6 volts with the current flowing in the opposite direction. After these two electric baths the pieces are immersed for 5 minutes in a water rinse at room temperature, and then are dipped for 18 seconds in a tank containing a cyanide solution using an electric current of 9 volts. This cyanide electric bath is intended to take up any traces of oxygen which may be on the work. Except for a 30-second dip in distilled water, it is the final operation before the pieces go into the gold bath.

Because of the expense of the gold in solution great care is taken to keep the gold bath clean and in proper condition for successful plating. This bath of course is the crux of the whole sequence. Pure gold anodes costing $18,200 each are used and the solution in the bath, gold cyanide, is freshened daily. The plating in the gold bath is done with a current of 60 amperes at about 3½ volts. A heavy uniform plate is deposited in a short period of time. Some excess gold is carried over to the rinse tank with the pieces as they leave the gold bath, but this nearly all is recovered by chemical action. The first rinse after plating is in distilled water where the pieces are held for 18 seconds. This is followed by a second distilled water rinse of longer duration. Recovery of gold from the first rinse bath exceeds a value of $1000 a month.

Three rinse baths follow the plating operation and after this the pieces pass through two drying operations, the first a cold air blast and the second a hot air blast. By the time these blasts have been completed the work has made the complete circuit of the machine and emerges at the front end near the start of the sequence. The second attendant at the machine takes the racks of completed pieces off the trolley hooks and hangs them on trucks ready to be taken to the final inspection department where they receive a rigid examination before being prepared for shipment.

Pieces to be nickel plated follow through the first few cleaning and preparatory operations of the gold plating sequence and then are transfered across a short aisle to the automatic nickel plating machine.

Plating Time Is 25 Minutes

The pieces are held in a solution in a long rubber-lined tank for 25 minutes, during which time a current at 2 volts pressure is passed through the solution. It is of the utmost importance that this current be held absolutely uniform and to this end a delicately-adjusted voltage control meter has been installed. Following the nickel bath the pieces are dipped for 18 seconds in a rinse bath and then pass by an air blast which dries them ready for removal to the final inspection department.

For both processes the solutions used in the tanks are kept uniform and up to requirements by laboratory control with daily tests. The final air drying for gold-plated parts has been developed carefully to eliminate spotting and to avoid the necessity of coloring the gold. When the temperatures of the two drying blasts are correct the pieces leave the machine with a bright, even finish, requiring no further treatment.

Following the gold plating operations the razor parts are placed on trays and sent to the inspection department for final examination

Bavaria Offers Market for Road Machinery

Bavaria is looked upon as a promising market for certain kinds of road building machinery in view of favorable prospects of expansion with the progress of the rather ambitious road building in that territory, Consul General C. M. Hathaway Jr., Munich, states in a report by the United States department of commerce, Washington. American road building materials and equipment have been introduced into Bavaria only to a limited extent, but lately local contractors have been buying American steel forms for concrete road construction, and appear to regard these as superior to anything available in Germany.

It would seem that the market for high-grade American construction materials and machinery in Bavaria is a favorable one, especially for the immediate supply of steel forms and the eventual introduction of free-fall mixers. The willingness of local contractors to consider American appliances is obvious, and if funds are further forthcoming to support the Bavarian government's road construction program, the market should be well worth careful consideration by American suppliers of road construction appliances.

A.S.S.T. Meets in New York

Eight Technical Papers Are Presented at Semiannual Gathering Feb. 7-8

Process for Denitriding Hardened Steel Hailed as Major Development

NITRIDING, sheet steel manufacture and normalizing, forging steels and heat treatment of alloy steels were among subjects discussed at the semiannual meeting of the American Society for Steel Treating at Hotel Pennsylvania, New York, Feb. 7-8. The contribution of most immediate practical value was announcement of a simple process by which nitrided steels can be softened for machining. Thus the nitriding process will profit from what formerly has constituted an objection.

The board of directors of the society announced that the second Western Metal congress will be held at the Civic auditorium, San Francisco, Feb. 16-20, 1931, and will constitute the semiannual meeting for that year. No decision was reached as to the place of the 1931 annual convention and exposition, but cities seeking the choice are Atlantic City, New York and Boston. The second edition of the society's handbook will be published in June of this year and will bear the title of *National Metals Handbook*. By action of the board, the Newark and Columbus groups were advanced to chapter standing. A constitutional change specifying an initiation fee of $15 for membership after Jan. 1, 1932, was recommended for ratification at the 1930 convention.

A radical change in *Transactions* was announced effective in September, 1930. All papers presented at annual conventions will be published complete in a bound volume of *Transactions* to be available on Jan. 1 of each year and must be purchased by members. A new publication will appear monthly to be known as *Metal Progress* and will have a page size 9¾ x 12½ inches. According to present plans the editorial matter will consist of convention papers, abstracts, plant descriptions and articles of welding and nonferrous metals.

Simple Salt Bath Method Effects Denitriding

ALTHOUGH authorities in nitriding have known for some time that nitrided steels can be denitrided and again nitrided, little commercial use of the operation has been made because no simple process had been perfected. Thus a practical method described by W. J. Merten, metallurgist, Westinghouse Electric & Mfg. Co., East Pittsbugh, Pa., at the Friday afternoon session attracted considerable attention and much favorable comment. One of the most frequent objections to nitrided steels in die molds and parts where die impressions and fitting parts must be changed more or less frequently is that ordinary annealing methods involving heating and slow cooling in gaseous atmospheres, liquid baths or vacuum furnaces are not successful or practical. Temperatures up to 2000 degrees Fahr. do not render the nitrided case machinable with ordinary machine cutting tools; even uniform grinding is difficult. Furthermore, high temperatures would cause excess distortion.

In connection with some work on bumper dies in July, 1926, the author discovered a method for softening nitrided aluminum-molybdenum steel. By way of experimentation, a sample of the hardened steel heated in a gas chamber furnace to 1800 degrees Fahr. did not lose its file hardness but had scaled slightly. Another sample heated in a 50-50 sodium-potassium chloride salt bath maintained at 1500 degrees Fahr. became soft to the file after some time of heating and slow cooling. Subsequent work showed a softening or decomposition of the nitrides at a lower temperature near the fusion point of the bath. While the surface of the steel was softened, the underlying case was unaffected. Apparently, according to Mr. Merten, a diffusion of the nitrides of the case into the denitrided surface layer takes place and further decomposition results until a marked dilution to complete decomposition occurs.

Nitrogen Given Off in Gaseous Form

Nitrogen is given off in a gaseous form (NCl_3). The operation, said the speaker, should not be classified as annealing since annealing is due to a grain structure modification. Denitriding is a time-temperature reaction and its speed is directly proportional to the temperature above the fusion point of the salt mixture, the best temperature being 1500 degrees Fahr. with 1300 degrees a minimum. Denitriding of Nitralloy (chrome-aluminum) and Almo (aluminum-molybdenum) has been equally successful, in fact, removal of the nitrides by decomposition is more complete in Nitralloy for two reasons: 1. Inward diffusion is less due to greater sluggishness of migration in chrome alloys; 2. The nitrided case of chrome-aluminum alloy steels generally thinner than those obtained in aluminum-molybdenum steels.

The process of denitriding is carried out as follows:

Immerse the work in fused salt, of large enough volume, which is at a temperature sufficiently high to keep liquid upon immersion of the piece. Heat to 1450-1500 degrees Fahr. Hold for sufficient time to give uniform penetration. Cool slowly to slightly above freezing point of salt and hold to equalize temperature. Withdraw the piece, shake off adhering salt film and cool in lime. For a deep case hold at high heat 2-3 hours. Molybdenum steels of over 0.50 molybdenum have air

hardening characteristics, therefore it is essential that slow cooling is conducted in the bath. Distortion also is kept to a minimum. A brinell of 250 usually is obtained on denitrided parts, permitting machining. Any adhering salt film must be removed by washing in boiling water before the soft parts reach a temperature below 200 degrees Fahr. to avoid pitting and corroding of the surface by hygroscopic salt.

Strains Must Be Removed

Mr. Merten stated that renitriding of aluminum-molybdenum offers no difficulties, neither does the steel develop new characteristics. Renitriding has not been extended to chrome-aluminum steel, consequently there is a remote possibility that it may respond differently. Discussing Mr. Merten's paper, V. O. Homerberg, associate professor of physical metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., emphasized that all strain must be removed from steel before nitriding, but these precautions are not always regarded and distortion occurs. The new method, therefore, makes possible denitriding, straightening and renitriding. The salvage value in such cases would be very high, according to Dr. Homerberg, who hailed Mr. Merten's method a distinct advance to the nitriding field.

In the final paper presented at the Saturday morning session, G. M. Eaton, Molybdenum Corp. of America, Pittsburgh, suggested methods for reporting on the hardness-depth characteristics of the nitrided steel case. Current reports of research are plotted on random scales, a procedure which hampers the rapid and critical comparison of the results. At this early stage of the nitriding development, it seems desirable and practical to develop a uniform method of reporting, consequently the author made tentative suggestions to start discussion. The nitriding committee seems a logical body to develop a recommended practice on this subject.

The depth-hardness characteristic seems to be a logical starting point for such a recommended practice and other features may follow logically. The depth hardness characteristic as plotted on plain co-ordinates gives a misleading picture of the wear resistance of the case, consequently use of a longarithmic scale of hardness and scale for hardness, stating that a practical scale of greater proven accuracy would be welcomed. He also suggested a merit index for wear resistance, this index being based on hardness alone. At the same time he emphasized the utter necessity for some ductility of case.

In advancing his suggestions, Mr. Eaton states:

"We conclude tentatively that until we accumulate more service data on the wear resistance of the nitrided case, the logarithmic index offers a most convenient method for comparative wear resistance expectations of various nitrided cases. We also conclude that this logarithmic merit index is enough closer to truth than the plain index and enough simpler than the geometric index to warrant its serious consideration for general adoption."

Discuss Use of Scleroscope

As an appendix to the paper, the possible use of the scleroscope as an inspection tool was discussed. The brinell and Vickers methods are preferred by investigators but the future may see a suitable brinell-scleroscope conversion table developed to warrant the use of the scleroscope. In discussion, one speaker suggested that use of a nitrided file or tungsten carbide tool might offer a quick method for testing the hardness of nitrided cases.

Normalizing Time for Steel Sheets Reduced

MAJOR mechanical, mechanical-metallurgical and metallurgical improvements of the continuous sheet normalizing furnace were reviewed chronologically in a paper "Recent Developments in Normalizing Sheet Steel" by Edward S. Lawrence, metallurgist, Duraloy Co., Pittsburgh. The early part of the paper was concerned with the reasons for normalizing, the advent of the continuous normalizer and the necessity for improvements over the furnaces used previously. These improvements center themselves around a correctly constructed cooling chamber wherein the time and rate of cooling the sheets are emphasized.

Extended Cooling Required

Fine-grained sheets of sufficient softness can be obtained only by extended cooling and in such a way as to prevent scaling. This is accomplished by passing the sheets slowly through the cooling zone in which cooling is retarded and from which air is excluded. Full-finished automobile body sheets still require a low-temperature anneal after normalizing to reduce stiffness, but the author predicted that the day is not far distant when space will be allowed for a prolonged time and rate of cooling in the normalizer so as to eliminate the box anneal. In present practice the continuous normalizer is accomplishing in a few minutes an operation which formerly required from 75 to 100 hours.

Deep Drawing Steels

In a paper discussing sheet and strip steel for automobile bodies, Joseph Winlock, research metallurgist, and George L. Kelley, metallurgist, Edward G. Budd Mfg. Co., Philadelphia, described the manufacture of the steel and the subsequent forming by deep drawing. Steel for this work is basic open hearth containing carbon under 0.14, manganese under 0.60, phosphorus under 0.045 and sulphur under 0.045 per cent. Alloy steels have not been used extensively, partly because of the added cost and partly because the inherent strength of this steel is of secondary importance. Strength and rigidity are imparted by proper design of the stamping.

Two conditions to be avoided in annealing steel for deep drawing are production of too large a grain size and too small a grain size. Stampings which have been annealed so that a subsequent drawing operation can be performed must be allowed to cool thoroughly to atmospheric temperature, otherwise the steel will show a tendency to fracture. In the manufacture of steel, the authors believe "the art precedes the science," not only because the subject does not easily lend itself to analysis, but also because in the use of empirical methods, many facts which are already known have not been taken into consideration. The paper presented a few observations made during the course of a study of the subject from a metallurgical viewpoint.

Information Still Lacking

Although large forgings constitute an important and constantly increasing field for alloy steel, the information regarding them is not nearly as complete or as readily available as the information pertaining to other forms of alloy steel. This was pointed out in a paper on nickel alloy steel forgings presented by Charles McKnight, in charge of alloy steel development, International Nickel Co. Inc., New York. For example, data published by the Society of Automotive engineers on the properties, analyses and heat treatments of alloy steel

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Activities Are Extended

Arthur G. McKee & Co., Cleveland and London, engineers and contractors in connection with blast furnaces, steel plants, and oil refineries, announce extension of their activities to include general industrial building engineering and construction. The company heretofore has limited itself to building operations incidental only to its specialized work which has extended throughout the Americas, Europe and the Far East.

Southern Metal Trades association has published a bulletin outlining aims of the organization and a little of its history to emphasize its service to industry. W. E. Dunn Jr., Healey building, Atlanta, Ga., is secretary.

Acting President Chosen

Maj. Gardner S. Williams, Ann Arbor, Mich., has been named acting president of the American Engineering council, and will occupy the office until the return from a trip around the world of President Carl E. Grunsky of San Francisco. Mr. Grunsky, former head of the American Society of Civil Engineers, was recently elected president of the council for a two-year term, succeeding Arthur W. Berresford, New York. Major Williams is a vice president of the council.

Round Table Discussions Feature Foundry Meeting

CO-OPERATION, as it exists in industry today, was illustrated in a conclusive way at the fourth annual foundry conference held Feb. 4-6 at Madison, Wis., under the auspices of the college of mechanics and engineering, department of metallurgy, University of Wisconsin. Over 125 foundrymen from Wisconsin and surrounding states attended. Practically all of the meetings were in the form of round table discussions.

D. G. Anderson, Western Electric Co., Chicago, presented a paper on "What Is Happening in the Foundry." He pointed out that since the demand for castings originates with the designing engineer, it is necessary for the foundry industry to present information on castings to the engineer which is comparable to that supplied by manufacturers of structural steel and other engineering materials.

Apprenticeship Courses Defined

Two sessions on apprenticeship training were in charge of C. J. Freund, Falk Corp., Milwaukee. In the discussion of this subject, apprenticeship was defined as an organized program under contract, either expressed or implied, for trade training. The need for apprenticeship training as a means of filling the lower supervisory field, as well as the need for experienced molders formed the keynote of the discussions.

The first round table on foundry practice was in charge of E. M. Handley, Chain Belt Co., Milwaukee. Discussion at this meeting centered around methods of determining the proper pouring time and size of choke. The second meeting on foundry practice was in charge of William Bradley, National Steel Foundries, Milwaukee.

Heat treatment of steel was discussed at two sessions under the leadership of F. Kubosch, Turner Heat Treating Co., Milwaukee, and J. R. Houston, Harnischfeger Corp., Milwaukee. Various types of equipment best suited to various classes of commercial heat treatment were discussed.

Foundry Management Discussed

In discussing foundry management, F. K. Vial, Griffin Wheel Co., Chicago, illustrated the methods of planning followed by his company. He exhibited a copy of the standard practice code developed by his company over a period of 35 years. The second session on foundry management was directed by Frank G. Steinebach, managing editor, *The Foundry*, Cleveland, and considered problems regarding the relation of management to personnel.

A steel session, led by B. Aamodt, Milwaukee Steel Foundry Co., Milwaukee, considered basic electric operation, general problems of charging, different classes of scrap, degree of oxidation in melting and methods of refining. The second steel session, under the leadership of J. C. Sweitzer, Sivyer Steel Casting Co., Milwaukee, discussed general operation of the basic electric furnace, costs of basic and acid processes, maintenance, etc.

W. J. MacNeill, Federal Malleable Co., West Allis, Wis., led one session on malleable iron founding, where discussion centered around melting with hand-fired coal, powdered coal, and pitch. Annealing malleable castings was considered at length at the second malleable session under the direction of Dr. Anson Hayes, American Rolling Mill Co., Middletown, O. Mr. Hayes described three new electrical annealing furnaces which have been installed at the Erie Malleable Iron Co., Erie, Pa., and operate on an annealing cycle of 72 hours.

Ohio Founders Discuss Phases of Industry

Material handling in small foundries, advances in nonferrous practice and various items connected with the Ohio foundry code occupied the attention of members of the Ohio Foundries Association Inc., at a well attended meeting in Dayton, O., Feb. 5.

Tony Kramer, Advance Foundry Co., and vice president of the association, submitted a report of his activities in Columbus in connection with the preparation of a code to govern the conduct and operation of the foundries of the state.

W. B. Marshall of the Chain Belt Co., Milwaukee, cited several instances in support of his claim that various forms of mechanical equipment are coming to be recognized as actual necessities in the modern foundry. Large foundries discovered this fact long ago and were the pioneers in the movement to have the great bulk of their work done by machinery. On account of the economic features involved, many of the smaller foundries have found and are finding it advisable to follow the example.

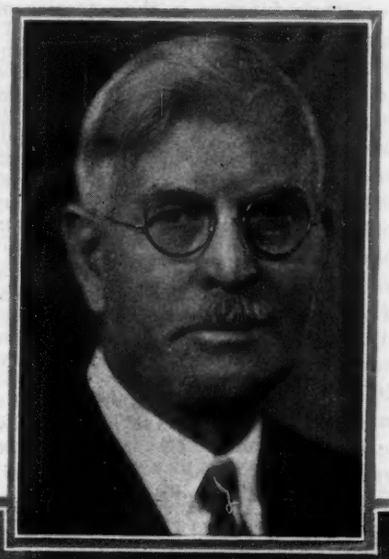
Correct Equipment Prevents Loss

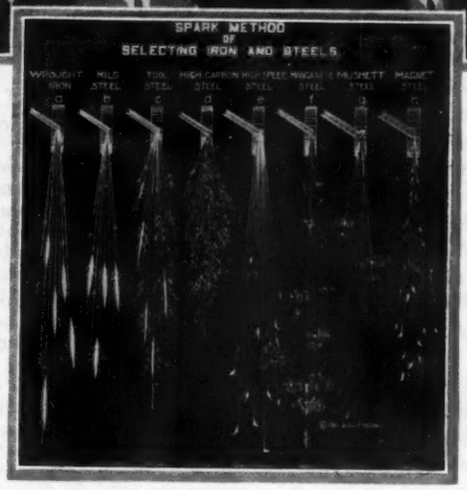
He claimed it is impossible to set down any hard and fast rule on the best type of equipment to adopt. Local conditions govern this feature. In a detailed analysis of operating costs in a foundry producing 25 tons of small and medium weight gray iron castings he showed that installation of mechanical equipment effected a saving of $61,000 on an investment of $40,000.

A. A. Grubb, metallurgical engineer, Columbus, described many of the advances that have characterized brass foundry practice in recent years. As a result of investigation from a theoretical and practical viewpoint, the ingot metal now supplied is of a higher character than formerly. In lauding the work of the sand research committee of the American Foundrymen's association he claimed one of its most important features is that it has given foundrymen a language of understandable terms.

Wins Reputation as a "Learned Blacksmith"

Forging Instructor Rises to Recognition as Authority in Heat Treatment of Iron and Steel





IN THE upper left is John F. Keller, the well-known lecturer on iron and steel. The center illustration shows one of the many groups which he organized and instructed. Early in his work at Purdue university, Mr. Keller developed the spark method for selecting iron and steel. The chart used in this connection is shown at the right.

ONE of the country's best-known experts in heat treatment of iron and steel is John F. Keller, steel specialist, engineering experiment station, Purdue university, West Lafayette, Ind., and for the last three years special lecturer for the American Society for Steel Treating. Twenty-five years ago last month, Mr. Keller started his metallurgical career as an instructor in the Purdue forge shop and in the quarter century his various university and business connections have advanced him to distinction as an authority on the treatment of metals.

Soon after coming from Ireland at the age of nine, Mr. Keller started to make his own living as an apprentice in his father's florist shop. A financial panic cut short this work and he was forced to find employment elsewhere, landing in the forge shop of the Big Four railroad. With close application he soon worked his way up to the position of expert mechanic by revealing a natural ability for handling iron and steel work. His keen perception of this kind of work aided his climb up the ladder, and by coming into contact with other men in the same line of endeavor he acquired new ideas on the subject. Combining the opinions of other specialists with his own, his conception of the subject was expanded.

In 1904, Mr. Keller was serving as foreman of the forge shop of the Nordyke & Marmon Co., of Indianapolis, Ind. A friend advised him to apply for a position as instructor in the forge shop at Purdue university, since a vacancy had occurred. His application for this opening was accepted and Mr. Keller went to Lafayette Jan. 2 1905, to take up his new duties. In the course of his training, he had so developed his theories that he could teach others with a minimum of technical language. He had a knack of telling what he wished in language which was easily understood by the layman. His success as an instructor was noted and within a short time he was rewarded by an assistant professorship.

For nearly 15 years he remained at Purdue and in all that time established two unique records—he never sent a student before the dishonesty committee for cheating and he was the only man to attain the rank of assistant professor without graduating from high school or college.

In 1919, Mr. Keller resigned his position at the university to become special representative for a steel company, with which he was employed for one year. He then accepted a chair on the faculty of Lewis institute in Chicago, where he remained for two years, during which time he developed his evening lecture course on "Steel and Its Treatment." Because of his outstanding success among the industrial groups of Chicago, he was invited to return to Purdue university as specialist in the engineering extension department on iron and steel and their treatment.

Assisted Engineering Extension

The engineering extension department of Purdue university does extension work over the state by conducting in the larger industrial centers classes in different phases of engineering. Mr. Keller, being an iron and steel specialist, appeared before men employed in metal work. His course of six lectures and demonstrations, devised while at Lewis institute, consisted of lessons which covered the manufacture of iron and steel, the characteristics of these materials and their behavior while passing from bar stock to the finished product. The lectures were intended to assist members of the production forces in the metal parts and tool industries, by giving them a better understanding of the basic principles of the effect of working and heat treatment on the physical properties of iron and steel.

In the past seven years, Mr. Keller has appeared before more than 5700 men in Indiana, representing 575 industries in 27 cities. Three years ago, the officials of the American Society for Steel Treating, taking cognizance of the service rendered the industries of Indiana, made a co-operative arrangement with the university, whereby Mr. Keller spends five months every year working under the auspices of the society, giving his lectures and demonstrations outside of Indiana. During this period he has organized 30 groups with a total enrollment of 4617 in numerous states from Massachusetts to California and not including Indiana. Men from all ranks in the manufacturing business have enrolled in his classes including presidents of companies, superintendents, draftsmen, chemists, accountants, sales representatives and many others. His largest single group consisted of 410 production men of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

In connection with the work under the auspices of the American Society for Steel Treating that given during the fall of 1929 proved the most successful from the enrollment point of view. Over 2000 joined the classes, of which number 1043 were in the groups in Albany, Schenectady, Syracuse, Rochester and Buffalo and 980 were in four groups in Pittsburgh and environs. The largest single group was 410 employes of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. General Electric Co., Schenectady, N. Y., with 372 was second and National Tube Co., Pittsburgh, with 367 was a close third. The average attendance for the New York groups was 91 per cent and 90 per cent was the showing of the Pittsburgh groups, These figures indicate the interest displayed.

During each of the three years the work has been carried on in series of four or five communities so situated that Mr. Keller could speak in each community in rotation, making the circuit each week for six consecutive weeks. In each lecture or talk, the complex and often dry fundamentals are balanced with more interesting and oftentimes spectacular demonstrations. Mr. Keller uses lantern slides showing charts and examples of parts and tools.

Lectures Cover Complete Details

Brief summaries of the lectures are as follows:

Lecture No. 1. The manufacture of iron and steel from the crude method of rule of thumb to present highly efficient method of procedure control. Methods of selecting metals and identification, including a brief description of the "Spark Test."

Lecture No. 2. A practical demonstration of the "spark method" of selecting iron and steel on a live emery wheel. The basic principles of forging, with emphasis on the causes of defects, and the effect of heat and work upon the crystalline structure of iron and steel.

Lecture No. 3. Annealing, its purpose and importance in mass production of today, particularly in machining qualities. The refining of the crystalline structure to develop the physical characteristics desired in a metal. The importance of annealing iron and low-carbon welded parts such as chains, bolts, and other machine parts. The iron-carbon diagram explained.

Lecture No. 4. Solid solution theory illustrated through a colored iron-carbon diagram. The decalescence and recalescence points clearly illustrated and demonstrated by an electric device that clearly visualizes these phenomena and their importance in the hardening of tool steel and the heat treating of machinery parts to develop the physical characteristics desired. The carburizing of steel and its heat treatment.

Lecture No. 5. Quenching media, their function in the retention of characteristics desired in steel. Tempering (drawing) of tool steel and tempering of machinery parts to develop toughness and fatigue resistance qualities to such tools or parts. The heat treatment of high-speed and alloy steels. A brief outline of metallography with lantern slides showing photomicrographs of the important microconstitutents of steel when properly and improperly heat treated.

Lecture No. 6. Why iron and steel warps and cracks in the various operations of heating and cooling. This phase of the subject will also be touched upon from the foundry angle, that is, the warpage of castings in their cooling operation as well as from the effect of oxyacetylene and other autogenous methods of welding. Why certain types of welds fail.

All Groups Represented

The total enrollment of 4617 in the last three years has maintained an average attendance of 92 per cent. By occupation this enrollment was constituted as follows:

Occupation	Total	Per Cent
Shopmen	1,416	30.7
Foremen	1,057	22.9
Engineers	555	12.0
Superintendents	425	9.2
Draftsmen	323	7.0
Miscellaneous	227	4.9
Metallurgists	197	4.3
Chemists	154	3.3
Managers	119	2.6
Sales Representatives	79	1.7
Purchasing Agents	31	0.7
Presidents	20	0.4
Accountants	14	0.3
	4,617	100.0

"People often wonder why men in executive positions want to attend these classes," said Mr. Keller, "Men who enter the metal field, do it usually from necessity, not from choice and generally with little knowledge of the vocation they are entering. Those who are intelligent and perceptive learn by observation and experiment. In the course of time they become assistant foremen, foremen or advance to superintendent or manager. In the upward climb, the individual assumes many responsibilities, and has neither time, facility nor inclination to study the fundamentals of steel and its treatment."

This being a known fact, Mr. Keller has organized his work in such a manner that he paints a concrete picture of the steps involved in the change from the iron ore to the finished product. Therefore, many of these executives, appreciating the value of knowledge of the fundamental facts as presented, can obtain a working knowledge of the subject of steel in a comparatively short time.

In attempting to present a kaleido-

(*Concluded on Page* 62)

Steel Treating Society Meets in New York

(*Concluded from Page* 55)

are standard, but are not applicable to large forgings as they are based on tests made on 1-inch bars.

Mr. McKnight's paper dealt with the manufacture, uses, analyses, heat treatment and properties of nickel alloy steel forgings larger than 4 inches in diameter or equivalent section. Mr. McKnight briefly described the effects produced by the common alloying elements, nickel, chromium, molybdenum and vanadium, then discussed in some detail the various combinations containing nickel. Because of the intricacy of forgings, physical specifications usually are low and as a result actual tests reveal properties of considerably higher value.

In discussing this paper, W. J. Merten, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., pointed out that as a rule higher quality forgings are produced by the hammer method rather than pressing, but of course hammering is not feasible in very large forgings. In answer to a question, Mr. McKnight stated that in a nickel-molybdenum steel 0.15 to 0.20 per cent molybdenum is required to eliminate temperature brittleness.

Chromium Additions Studied

The effect of chromium additions to manganese-chromium steels was set forth in a paper by A. B. Kinzel and W. B. Miller, Union Carbide & Carbon Research Laboratories Inc., Long Island City, N. Y. The authors presented results of a laboratory study on a series of steels ranging from 0.08 to 0.50 per cent carbon and 0.6-1.8 per cent manganese, with chromium additions from 0.3-1.1 per cent. The beneficial effect of chromium was evidenced by the increase of ultimate strength without proportional decrease in ductility. Practical application of such a steel was demonstrated by the construction of a welded pressure vessel and its subsequent test to destruction. The possibility of as rolled or normalized structural steels with satisfactory ductility and higher strength than the present manganese steel by the addition of small percentages of chromium to these steels was indicated.

The tank constructed for testing was about 2½ feet in diameter and 7 feet long with elliptical heads. After welding with oxyacetylene the tank was normalized to relieve strains, then tested to destruction. Before bursting it expanded 3¾ inches, the fracture occurring entirely outside of the weld at a pressure of about 78,000 pounds per square inch. A. V. DeForest, research engineer, American Chain Co., Bridgeport, Conn., highly complimented the authors on their work and said it had proved helpful to the Spang-Chalfonte & Co. Inc., Pittsburgh, manufacturers of seamless tubing. A representative of the Pittsburgh Steel Products Co., Pittsburgh, reported his company is guaranteeing strengths up to 125,000 pounds per square inch in certain sizes of oil field tubing containing no chromium. In reply, Mr. Kinzel pointed that tests indicated a chromium addition to the same tubing would develop a strength of 150,000 pounds.

Crystalline Structure Studied

A study of the crystalline structure of martensite was reported in a paper by K. Heindlhofer and E. C. Bain, research staff, United States Steel Corp., Kearny, N. J. X-ray diffraction and examination with petrographic or ore microscope were the two principal methods employed in the study. Since the value of the data depends almost entirely upon control of conditions of the experimentation and upon interpretation of results in terms of atomic structure, a portion of the paper was devoted to an accurate description of X-ray diffraction.

The authors concluded that martensite is composed chiefly of characteristically distorted ferrite units or grains the size of which is not greatly different from that of the parent austenite. The type of distortion is principally that developed by twisting or bending in such a manner as to retain a moderate constancy of spacing between the 110 planes but at the same time to vary the orientation of some of the same planes through a considerable angle. In addition, the ferrite units possess a marked random atomic irregularity of the solid-solution type. The hypothesis was submitted that the hardness of martensite is not explained on the basis alone of grain size or of any distortion of the cold work type but more probably depends upon the strong interatomic bonding within the greatly supersaturated pseudo-solid solution of carbon in ferrite.

The value of this investigation was expressed by several discussors and at least one intimated that some revision may be necessary in his own conception of martensite. This paper illustrated the value which may result from intelligent use of X-rays, although there is evident need for a common interpretation of their application and results. In reply to a question, Dr. Bain stated that the conclusions of this research checked with surprising closeness the theories on martensite as advanced by Dr. Albert Sauveur, Harvard university, Cambridge, Mass. It is understood, however, that Doctor Bain and Doctor Sauveur have applied somewhat different definitions to martensite.

A highly technical paper on the transformation and constitution of high chromium steels, prepared by Takejiro Murakami, Kojin Oka and Seiji Nishigori, Tohoku Imperial university, Sendai, Japan, and abstracted by Jerome Strauss, Vanadium Corp. of America, New York, concluded the Friday afternoon session. The authors studied high chromium steels containing from 10 to 30 per cent of chromium and less than 1.1 per cent of carbon by the magnetic, dilatometric and microscopic methods. Dr. E. C. Bain, research laboratories, United States Steel Corp., Kearny, N. J., highly complimented the Japanese investigators for their extensive research but stated that their conclusions differed somewhat from those of Americans.

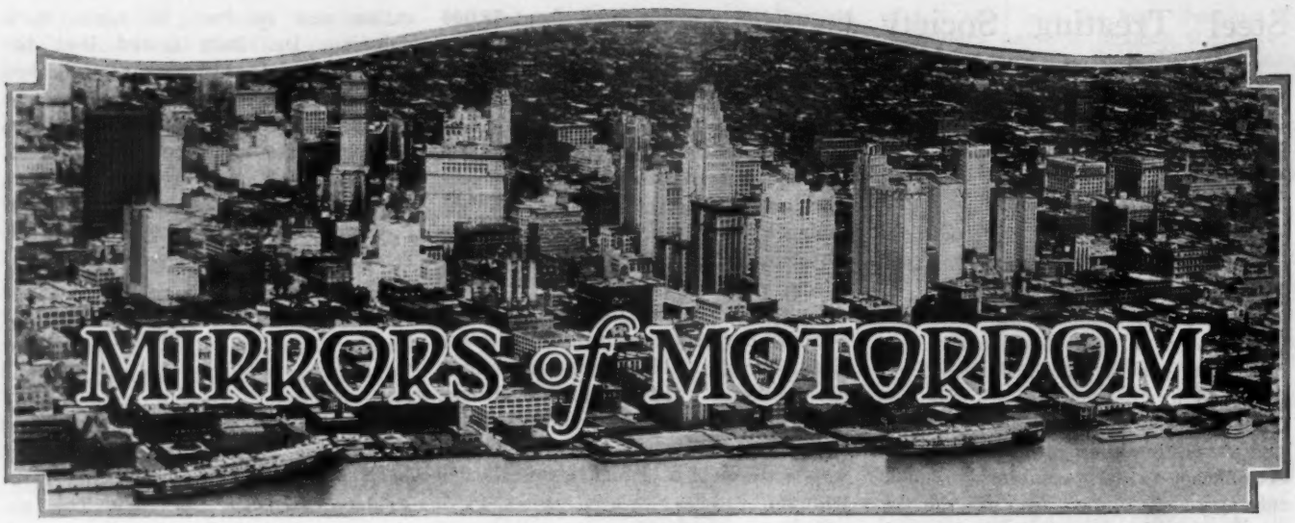
Film Shows Production of Monel Metal

A two-reel motion picture telling the story of Monel metal has been released by the Rothacker Film Corp., Chicago. The film shows the preparation of the metal in its various commercial forms at Huntington, W. Va., and traces its various uses in more than a score of different industries.

Also shown in the film is the tapping of an 11-ton furnace with the molten metal being poured at a temperature of 3000 degrees Fahr. This is the largest nonferrous electric furnace in the world. The picture is being offered to schools, societies, commercial organizations, and the like without charge and is available in 35 and 16-millimeter widths.

Mechanization Book Out

The new 1929 Year Book on Coal Mine Mechanization has just been published by the American Mining congress. The book, containing 400 pages, gives a complete picture of the progress which is being made toward the elimination of hand loading in coal mines and the substitution of machine methods. It discusses and describes mechanization, its development, its economic phases, its progress in the several coal fields of the United States and foreign countries.



Auto Output Gains, but Has Lost Some Momentum

* * * * * * * * *

Good March in Prospect; Ford Farming Out Parts

Detroit, Feb. 11

A GRAPH of automobile production by weeks this year would disclose a slight faltering as January opened, then an aggressive, rising curve the remainder of the month, followed by an almost complete flattening-out of this curve in the first week of February. Present indications are that February will carry the curve upward, but almost imperceptibly.

Related to events, once the holidays were over production became sensitive to the good reports from the major automobile shows and the necessity for stocking dealers with the new models. Any improvement over December, the dullest production month in eight years, would have created enthusiasm.

But now the momentum derived from the shows has been dissipated. Dealers generally are well stocked. Retail buying, never brisk in February, has suffered the further handicap of the worst driving weather—in many localities—since the automobile was introduced. And there is a slight undercurrent of uneasiness over the general business situation, which, coupled with unemployment, has inspired caution.

* * *

FEBRUARY, therefore, promises to be a month devoted more to holding the gains of January than to initiating further improvement. That there is no lack of confidence in the long pull is indicated by the experience of iron and steel sellers, who, without important exceptions, report moderate but continued expansion of specifications.

Since these specifications for the most part are for March delivery, they tinge the iron and steel outlook with a brightness not shared at the moment by current automobile production. Most motor interests apparently expect to go through February at the daily rate obtaining at the close of January; some have curtailed the programs they had scheduled for this month.

On a daily basis February output of cars and trucks probably will exceed that of January's by a modest margin. Then, if iron and steel specifications are not suspended, March should see distinct forward strides.

* * *

FORD unquestionably is improving his position, but it is far short of expectations entertained at the beginning of the year. January production, including foreign assemblies, is reported as 98,529 cars and trucks, which would place domestic production at about 80,000 units. This compares with approximately 85,000 for Chevrolet.

Last week Ford was averaging about 4500 units daily, on a 5-day week basis. It is variously reported that a 6000-unit rate is the goal, and that an effort will be made to bring February up to an average of 7000 daily. Only two weeks ago the February schedule was given as 7600 daily.

Certain it is that Ford retail sales, like those of competitors, have been disappointing. Stocks of old Model A's are reported well moved. Advertising and sales promotion plans of Ford, with other makers of low-priced cars, are now being centered on March.

* * *

CHEVROLET, originally planning to bring out about 110,000 units in February, may hold to its January total of about 85,000, which would be some improvement as February has only 20 production days compared with 22 in January. There is, however, a snap to Chevrolet operations not now found in many other producers.

Hudson-Essex, which pushed up to 1000 units daily last week, now plans to hold this rate through February rather than attempt the 1500 originally scheduled. Buick holds to about 500 daily, Oakland-Pontiac 600, Olds 400 and Chrysler about 775, including all divisions. Olds shipped 5500 units in January and has 9000 scheduled for February. Hudson shipped 18,900 last month and will about equal that level this month. Oakland-Pontiac will put on a big sales campaign in March.

Among the parts and accessories manufacturers there appears more hesitancy than among automobile manufacturers proper. Murray Body, for example, has returned to a 3-day week and its February schedule is reported to be little more than half that of January. This largely reflects the Ford situation. Continental

Editorials

Denitriding of Steel Now Possible

DISCOVERY of a satisfactory method for softening nitrided steel to make it machinable is a development which should bring greater popularity to the new method for case hardening. The inability to alter dies and other parts after hardening has retarded progress of the nitriding process despite the many advantages it offered. Now it becomes possible by a simple procedure to denitride, to make machining or other changes, and to renitride without altering the characteristics of the steel.

The new method, reported briefly on Page 54 of this issue, consists in heating the nitrided part to between 1300 and 1500 degrees Fahr. in a 50-50 solution of sodium-potassium chloride and cooling slowly. The nitrides in the steel decompose and release the nitrogen gas, the speed of the reaction depending upon the temperature. The thickness of the case determines the time required, the maximum time being 3 hours.

It will be understood readily that at the temperatures employed, danger from distortion of the work is not serious. Furthermore, it has been demonstrated that the underlying case is not affected in denitriding. Material can be softened to 250 brinell and this hardness permits machine operations. Although the temperatures used in nitriding are not high enough to cause warping, material not properly normalized frequently warps. Now it will be possible to denitride warped work, renormalize and straighten it and again nitride it without deterioration of the steel or product. Already there is evidence that the salvage value of the new process will be surprisingly high.

Aviation Also Has Its Parts Makers

INTRODUCTION of mass production methods into the aircraft industry, methods such as are currently popular in the automotive field, has been imminent, the only deterrent being the excessive number of aircraft builders in the field. Companies manufacturing airplanes far outnumber those making automobiles and it appears a logical conclusion that the only result can be the well-known survival of the fittest, together with numerous combinations and mergers of the small builders. This has been the trend in the automotive industry, and to the many interested observers of the infant airplane industry these great consolidations of financial resources, engineering skill and production facilities, represent the most economical method of satiating the demand.

But what of the innumerable aircraft manufacturing organizations which of necessity are not a part of these mergers? Are they foredoomed to ultimate extinction as many have prophesied? Fortunately for them, these questions may be sidetracked for the time being, thanks to the advent of specialized manufacture into the aircraft field. Although specialized manufacture has been available for some years in the form of standard parts, screw machine products, accessories and the like, now the establishment of such processes to supply steel wing ribs, ailerons, bulkheads and other airplane structural parts has enabled the small producer of planes to cope successfully with the mass production methods of his larger competitor. Thus the small interest becomes more of an assembler than a builder, examples of which are numerous in the automotive industry. The significance of this progress of specialized manufacturing will be realized profitably by the airplane manufacturer whose capacity is limited, and, indeed, by the entire industry.

1930 To Be a Competitive Year

STEEL producers' financial reports for 1929, now being released, revealing increases in earnings up to 127 per cent and apparently putting the industry on the soundest basis in several years, assume little more than academic or historical interest in view of the price cutting which developed last month.

On practically all finished steel products quotations today are the lowest since the middle of 1928, and on some flat-rolled lines have declined to depths not plumbed since the war. As observed here recently, to some extent this weakness is a hangover from the closing months of 1929.

It is now apparent that many producers, their viewpoint still colored by the poor showing of November and December, snapped at the first business showing in January and determined to corral some regardless of price. Now that demand has come back, there must be universal regret at the short-sighted price policy of January.

There is, however, another angle to this price

situation which will have an important bearing on 1930 earnings. The recent mergers and acquisitions of steel properties, distributing producer-consumer relationships of years standing and tying in heavy-tonnage consumers with certain producers, are provoking retaliation. It is not to be expected that producers will sit idly by while their outlets transfer allegiance.

No sooner did the Steel corporation purchase capacity on the Pacific coast than Bethlehem followed suit. When the Steel corporation ships finished material by water to North Atlantic points this summer it will invade territory close to Bethlehem mills. Consider all the bar mills being erected at or close to Detroit. Republic's affiliation with the Eaton utilities is causing many realignments. National Steel is endeavoring to round itself out, and thus becomes more competitive. Will Youngstown and Inland go to Republic or Bethlehem?

It looks like a highly competitive year.

Pensions May Be Humanitarian

MODERN industrial opinion is opposed to pensions for retired employes. The tendency is toward making the employe feel his own responsibility for providing against the day when he is unable to work, and helping him toward acquiring a savings account and a home. When to sincere efforts in this direction is added a pension provision the latter may and may not dampen the employe's interest in his own behalf. Certainly the charge of paternalism cannot be made against a company which pays the going rate of wages, makes it easy for employes to purchase stock of sound value and adds to this the guarantee of a pension.

The most conspicuous example of industrial pensioning is that of the United States Steel and Carnegie Pension Fund, established in 1911. This fund paid out in 1929 the sum of $3,940,678, or $452,191 more than in the preceding year. The amount is approximately 1 per cent that of the current payroll, and the number of beneficiaries is near 3 per cent that of the number of employes. Measured in this way there is nothing alarming about the pension plan. Yet more than 7000 retired employes share in the benefits and they received an average of $38.75 monthly in the past year. The addition to the pension list in the year was about 6 per cent of its previous total, and less than 1 per cent of all employes.

Time tends to keep the list low, and an observation of the plan and its workings over a period of years fails to disclose anything at variance with the modern spirit in thus helping in their old age those men who have given so much of their lives to the Steel corporation.

What Our Readers Are Thinking

Protecting Personnel Investment

To the Editor:

PROBABLY few industries exact a more thorough training of salesmen than the steel castings business. This is probably why a large percentage of the salesmen are men who have found their preparatory training on the molding floor or in the melting department of the foundries they represent. For unless they have a complete knowledge of the operating end of the business they are liable to quote unprofitable prices.

Before they can be considered seasoned representatives they must equip themselves with a knowledge of enginering technique. They must be able to estimate from blue prints, visualize the customers engineering problems and be able to advise architects, designers and engineers as to the economies to be derived from casting a particular part in steel; must be able to decide quickly whether a job calls for alloy or carbon steel, and should be abe to give the engineer at least some help in designing the casting.

Recognizing the extent of the investment which individual foundries have tied up in their salesmen the Steel Founders' Society of America, Inc., the national organization representing the manufacturers of steel castings, has established an employment service to conserve the interests of the industry in this regard. Foundries seeking competent salesmen or other skilled workers including foundry superintendents, melters, chemists, metallurgists, foremen, patternmakers, and the like, record their wants with the society's employment bureau. Salesmen and foundry operators who through no fault of their own find themselves temporarily unemployed are encouraged to file their applications with the society.

By thus connecting supply with demand for specialized foundry workers of all classes, a tremendous saving is effected, for men who have families dependent upon them will not wait long for an opening.

Obviously there is a double economy in retaining experienced men in the industry in which they have grown up. For not only does the loss of skilled men mean the dissipation of thousands of dollars which had been spent in training them but the men usually make sacrifices in salaries when they embark on new seas of endeavor. Thus an employment bureau is of benefit both to employers and employes.

The society has brought together foundries in need of men and competent unemployed workers who never would have made connections in any other way.

The bureau does not handle applications of men already employed by foundries. It investigates thoroughly the past records of all applicants, and has been highly commended by foundry executives who have profited from careful service.

Conservation of wealth and energy would seem to indicate that this type of service should be an important activity of all progressive trade associations representing industries in which skilled labor plays a major role. Anyone interested in the mechanics of the system utilized by the Steel Founders' society may secure same on request to its executive offices, 420 Lexington avenue, New York.

R. L. Collier, Assistant to Managing Director,
Steel Founders' Society of America Inc.
New York, Jan. 24, 1930.

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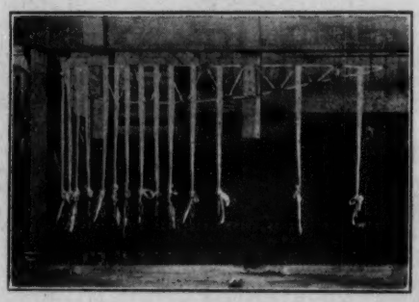

Specialized Manufacture of Parts Aids Small Airplane Builder. Page 45.

Our Largest Export Tonnage—Scrap

SCRAP comprised 18 per cent of American exports of iron and steel in 1929. This was the largest single item on the list, in tonnage, though representing only 3.9 per cent of total value. In the Jan. 30 issue, IRON TRADE REVIEW *showed that of 3,032,352 tons of iron and steel exports the amount of scrap was 552,373 tons. In this current issue, pages 49 and 50, some of the details and reasons for the impressive scrap shipments are presented in an article by J. J. W. Palmer, of the department of commerce. We exported scrap to 31 foreign markets in 1929. Are we letting too much of it go out of the country? The low cost of water transportation is said to make it more economical to ship it abroad from southern and southwestern ports than to transport it to the centers of American iron and steel manufacture. Thus foreign countries conserve their iron ore by using American scrap.*

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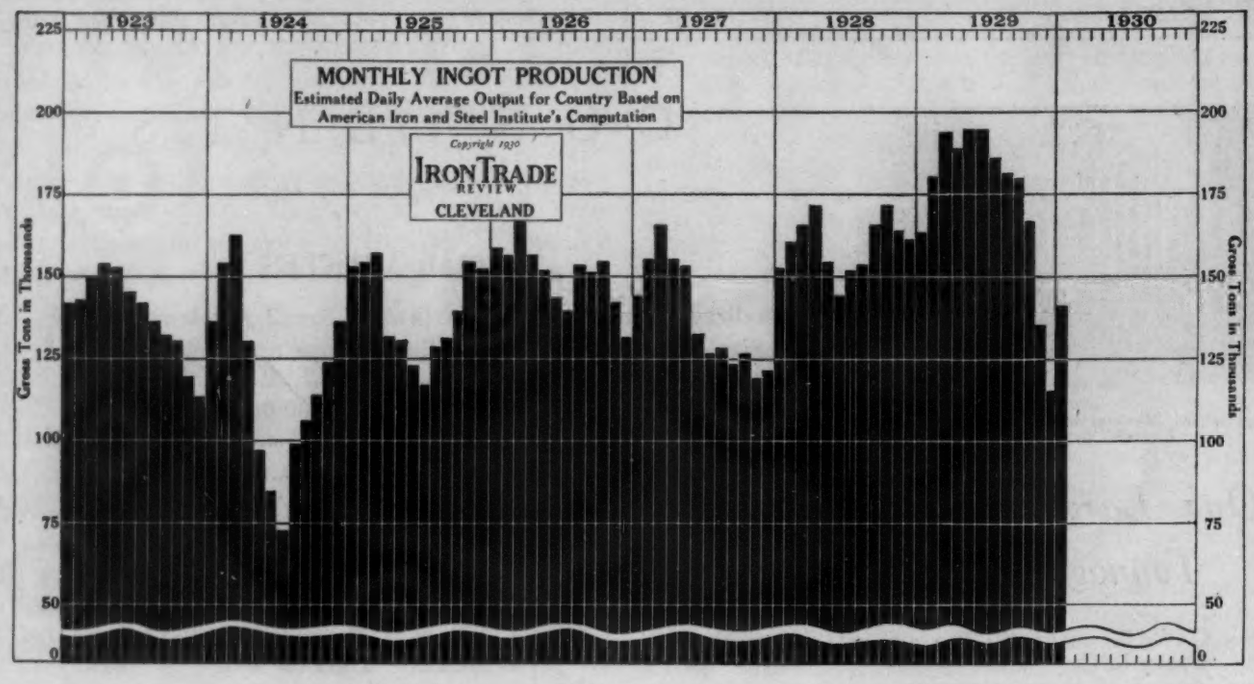
The Business Trend



Steel Ingot Output Turns Definitely Upward

FURTHER easing of credit conditions, a continued upturn in iron and steel production, gradually expanding automotive output and improvement in the building industry are favorable developments in the business situation.

DECLINING commodity prices, considerable unemployment, an unsettled agricultural situation and reduced freight car loadings are among the unfavorable factors. Automotive production, although increasing, is not up to levels of one year ago. Building is not getting off to as good a start as was expected in some quarters.

AVERAGE daily steel ingot output in January jumped 21.2 per cent compared with the low December rate, recovering the loss of November, also. The January rate still was 18.6 per cent below that of one year before and about 10 per cent under the past five-year average for January. Nevertheless both the steel industry and general business definitely turned the corner last month.

UNFILLED orders on the books of the United States Steel Corp. at the beginning of February were the largest in four years, showing a gain for the month of 51,517 tons. This was the fifth consecutive monthly gain.

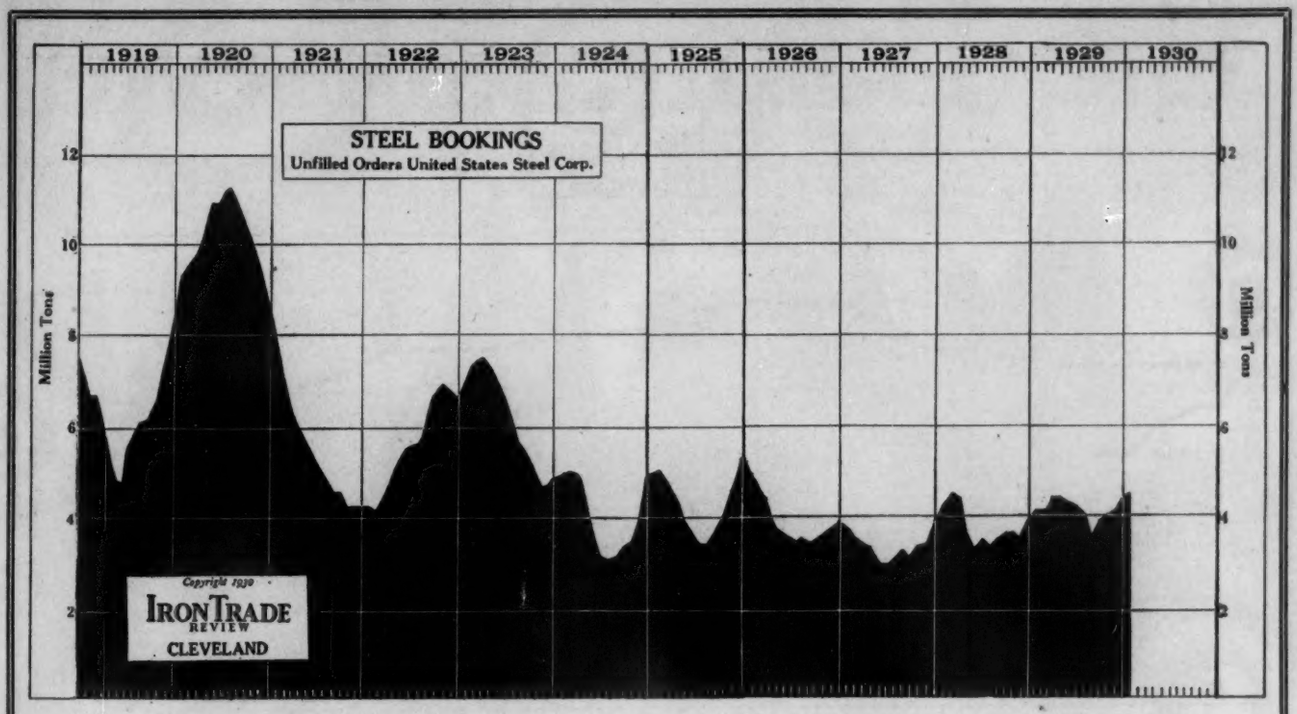
REDISCOUNT rate reductions last week by six of the federal reserve banks give further indication that money for the stimulation of business activity will be more freely available in the future at lower interest rates. Money rates are declining throughout the world.

EASING credit may serve to stem the decline in commodity prices. Bradstreet's wholesale price index as of Feb. 1 was the lowest for any February since 1922. The trend has been downward since last October.

AGAIN the building construction industry's outlook is much better than its record. January awards reported by the F. W. Dodge Corp. for 37 states totaled $323,975,000, which was 2 per cent greater than in December but 21 per cent less than for January, 1929. Work contemplated in January amounted to $1,455,349,600, an unprecedented total, representing a gain of 78 per cent compared with January, 1929.

WHILE spotty conditions in industry continue to be reflected by current news and business statistics, such a situation is not unusual in periods of recovery. Gradually favorable reports are becoming more numerous.

The Business Trend

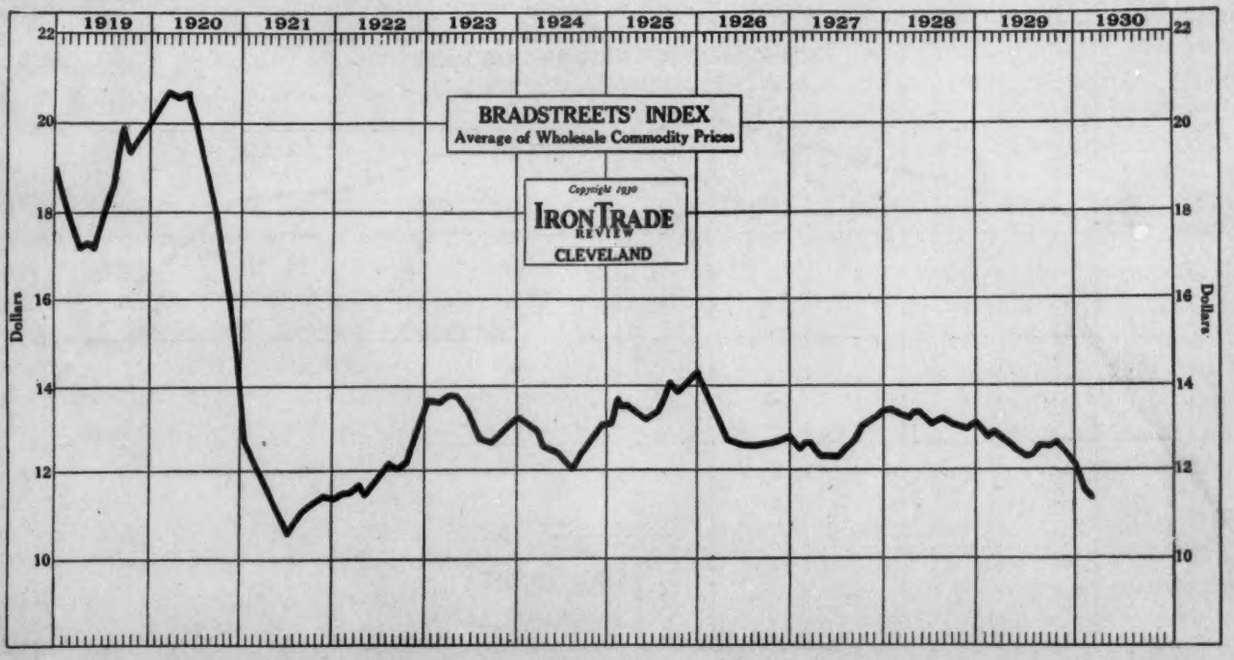


Unfilled Steel Orders

UNFILLED orders on the books of the United States Steel Corp. increased in January for the fifth consecutive month. The gain was 51,517 tons, making total bookings 4,468,710 tons as of Jan. 31, 1930. This is the largest order backlog the Steel corporation has had in four years, or since Jan. 31, 1926. The increase was not nearly as great as December's 291,848-ton gain nor was it up to the five-month average of about 182,000 tons, probably because of expanding operations in January.

Commodity Prices

WHOLESALE commodity prices have shown a steady downward tendency since last October. Bradstreet's index, standing at $11.5141 as of Feb. 1, is the lowest February index computed since 1922. It is 11.3 per cent lower than one year ago and only 8⅜ per cent above the lowest level of 1921. Compared with the Jan. 1 index of $11.6795, the decline for the month is 1⅜ per cent. Some economists regard the liquidation of commodity prices as the most disturbing factor in the business situation.



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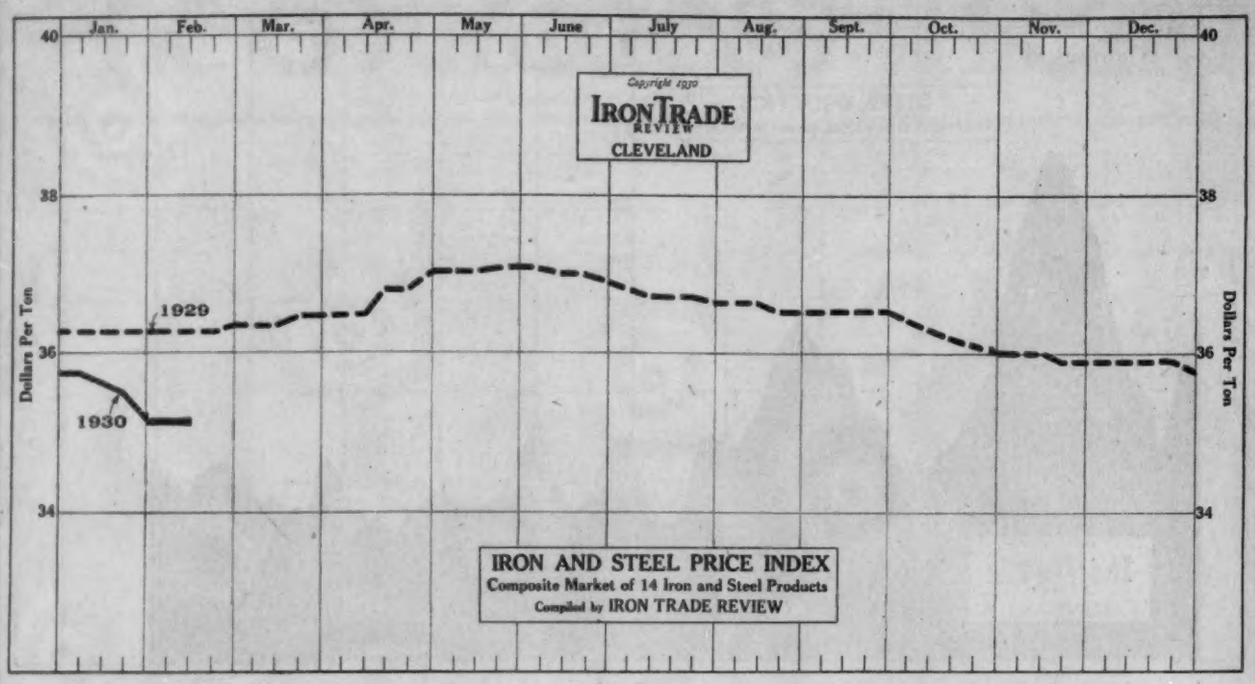
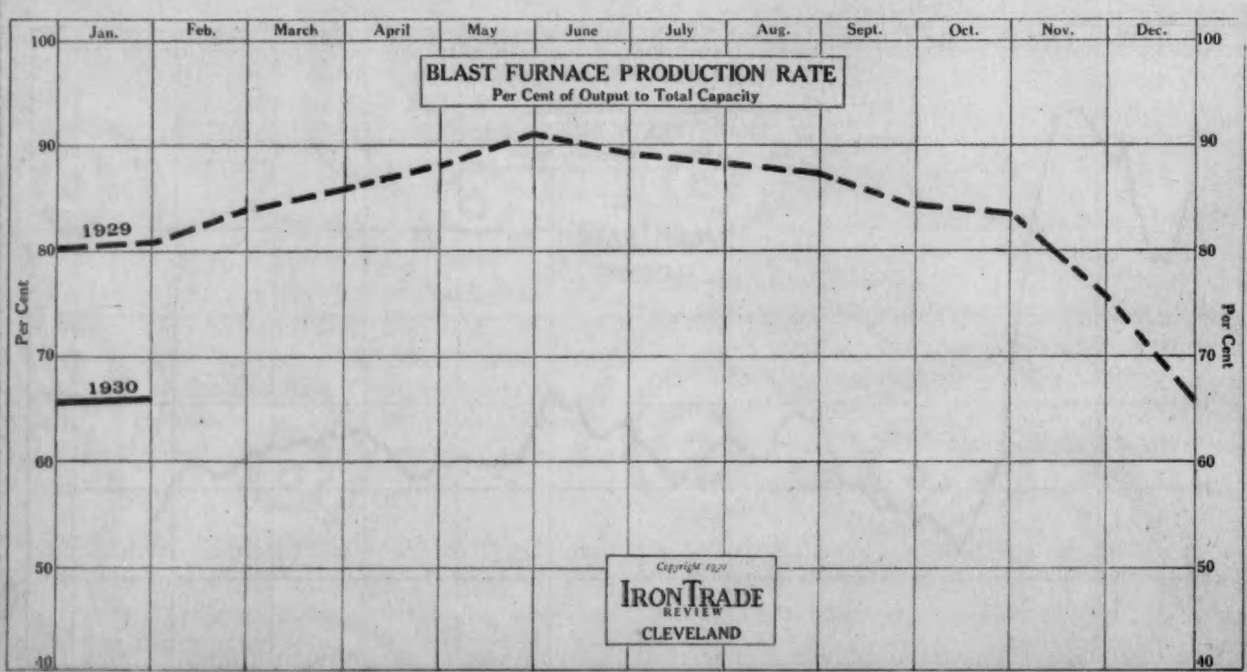


Iron and Steel Price Index

SIGNS of greater stability in the iron and steel markets are appearing. The current index of 14 iron and steel products compiled by IRON TRADE REVIEW stands at $35.24, or about $1 a ton lower than one year ago. Price weakness, first developing last June, showed up prominently when first quarter buying gave the market a severe test during the closing weeks of January. The general level of iron and steel prices has dropped only about 5 per cent in eight months.

Blast Furnace Activity

BLAST furnace operations increased by a slight fraction in January following seven months of declining activity. The January rate of output in relation to the country's total capacity of 5,367,665 tons was 66.4 per cent against 66.3 per cent in December and 80.3 per cent for January, 1929. Last month 16 blast furnaces were added to the active list, most of them during the last half of the month. Thus a sharp rise in operations by blast furnace interests is forecast for February.



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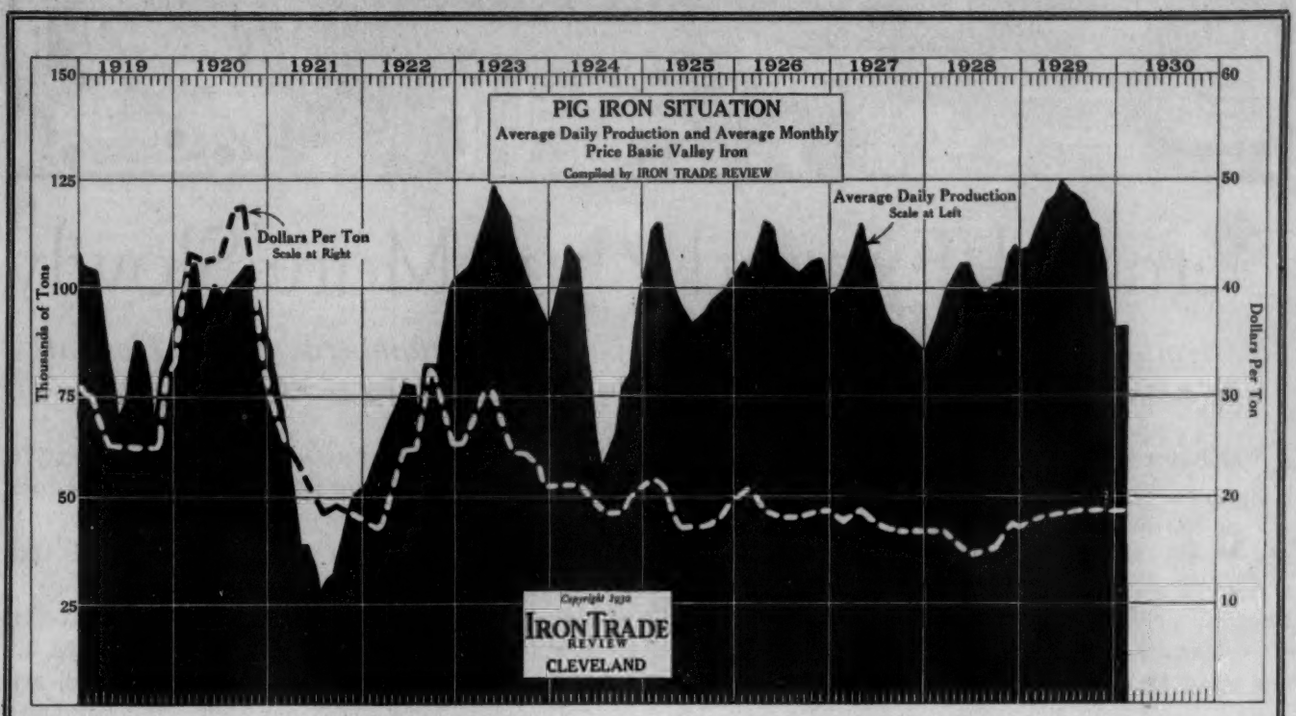
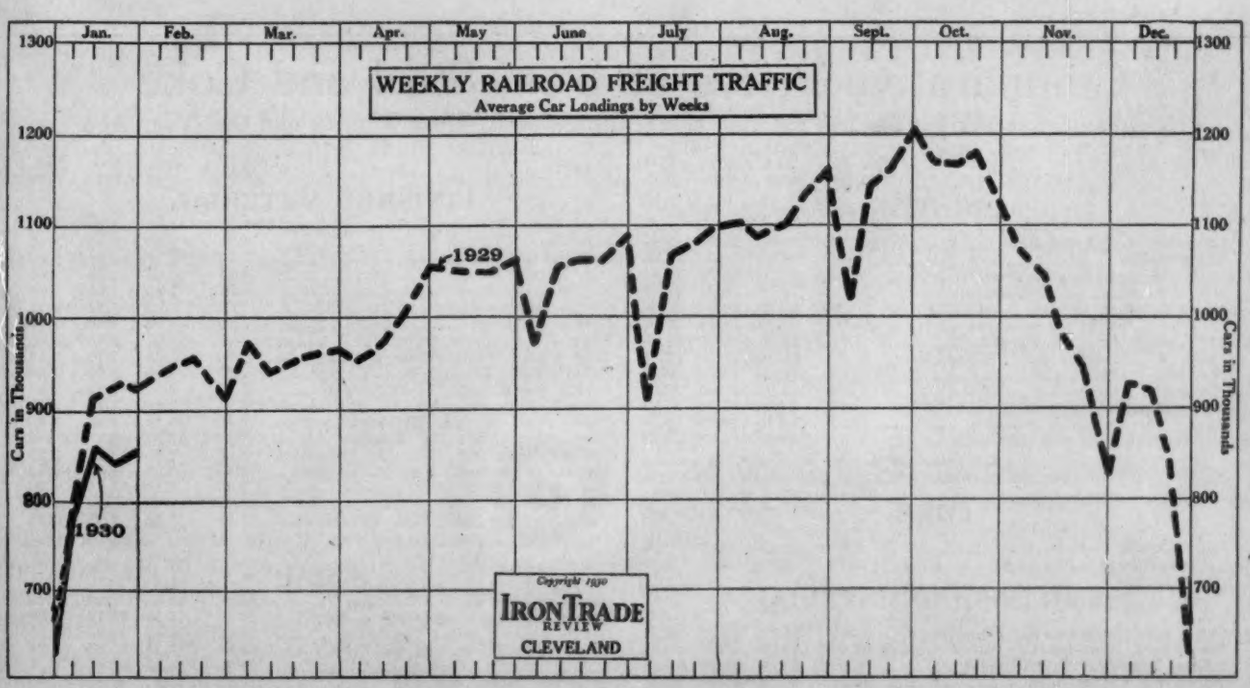


Pig Iron Situation

PIG iron production is increasing for the first time since last May. Average daily output in January was 91,565 tons. This was only 52 tons daily more than in December, but when coupled with the addition of 16 blast furnaces to the active list last month, the gain becomes significant. The January rate, however, was 17 per cent below that of one year ago at 110,742 tons daily. Basic pig iron remained unchanged in January for the ninth consecutive month at $18.50, valley.

Railroad Car Loadings

FREIGHT car loadings fail to reflect the improvement reported in some of the basic industries although during the last full week of January they registered a small gain, totaling 862,621 cars against 847,353 cars in the previous week. This was due chiefly to a larger movement of coal. Loadings for the first four weeks of 1930 totaled 3,349,424 cars compared with 3,571,455 cars in the corresponding period of 1929 and 3,448,895 cars in the first four weeks of 1928. Seasonal gains are expected this month.



Demand Expands, but More Slowly

Railroads Provide Major Market Support, as Automotive Needs Hesitate —Higher Prices Probable—Car Buying Heavy—Iron Shipments Up

STEEL requirements of the country continue to expand, but at a slower rate than in January and less evenly distributed both as to consumers and producers. Those districts deriving major support from the railroads, bent on retaining their title of premier consumer of steel, are more active than those largely dependent upon the automotive industry.

Hesitancy Is Not Discouraging

January's rebound was the sharper because of the extremely poor showing of December. For last month's rate of increase to have extended into February would have required a surge in demand foreign to the season. Hence there is no abatement of the expectation that once the industry gains its second wind this month it will again move forward.

Chicago district mills, rolling customary first-quarter track material and entering heavier specifications from freight car builders, have stepped up their operations to 85-88 per cent, compared with 90 a year ago. Pittsburgh mills, in a more spotty automotive situation, are holding at 75 per cent. Youngstown mills also are at 75 per cent, a fractional gain over last week.

Eastern mills are on more solid ground this week, averaging 80 per cent. Thirty of the 34 open-hearth furnaces at Cleveland are active, a decline of two. Steel corporation subsidiaries, at 80 per cent last week and 75 two weeks ago, are operating this week at 83 per cent. Independents are averaging 76 per cent and the entire industry 78, contrasted with 87 per cent a year ago.

February Car Buying To Pass 17,000

Now that production has made a heartening and unexpectedly-rapid comeback thus far in 1930, increasing concern is manifest over prices. It seems certain that an effort will be made in the next thirty days to advance prices from the low levels to which they retreated last month. If past experience is any criterion, however, consumers will be permitted some coverage before the higher levels are made effective.

To the 11,350 freight cars ordered by the

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Feb. 12. 1930	Jan. 1930	Nov. 1929	Feb. 1929
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.76	19.86
Basic, valley	18.50	18.50	18.50	17.50
Basic, eastern, del. eastern Pa.	19.00	19.20	19.75	20.50
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.26
No. 2 foundry, Chicago	20.00	20.00	20.00	20.00
*Southern No. 2, Birmingham	15.00	14.70	14.00	16.50
**No. 2X, Virginia Furnace	18.25	18.25	18.25	21.25
**No. 2X, Eastern del. Philadelphia	21.26	21.56	22.26	22.01
Malleable, valley	19.00	19.00	19.00	18.00
Malleable, Chicago	20.00	20.00	20.00	20.00
Lake Superior, charcoal, del. Chicago	27.04	27.04	27.04	27.04
†Gray forge, del. Pittsburgh	19.13	19.13	19.13	18.76
Ferromanganese, del. Pittsburgh	103.79	104.79	109.79	109.79

*1.75 to 2.25 silicon. For local delivery, Northern shipments based on $13 to $14, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.60	2.55	2.65	2.90
Connellsville foundry, ovens	3.50	3.50	3.55	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	33.00	33.80	35.00	34.25
Sheet bars, open-hearth, Pittsburgh	33.00	33.80	35.00	34.25
Billets, open-hearth, Pittsburgh	33.00	33.80	35.00	33.25
Wire rods, Pittsburgh	40.00	40.00	40.00	42.00

	Feb. 12. 1930	Jan. 1930	Nov. 1929	Feb. 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.85	1.90	1.90	1.90
Steel bars, Chicago	1.95	2.00	2.00	2.00
Steel bars, Philadelphia	2.17	2.17	2.22	2.27
Iron bars, Chicago	1.95	2.00	2.00	2.05
Shapes, Pittsburgh	1.85	1.90	1.90	1.90
Shapes, Philadelphia	1.86	1.91	1.96	2.01
Shapes, Chicago	1.95	2.00	2.00	2.00
Tank plates, Pittsburgh	1.85	1.90	1.90	1.90
Tank plates, Philadelphia	2.00	2.05	2.10	2.10
Tank plates, Chicago	1.95	2.00	2.00	2.00
Sheets, black, No. 24, Pittsburgh	2.65	2.70	2.75	2.85
*Sheets, blue anl., No. 13, Pittsburgh	2.25	2.30	2.35	2.10
Sheets, gal., No. 24, Pittsburgh	3.30	3.35	3.45	3.60
Sheets, black, No. 24, Chicago	2.80	2.90	2.95	3.00
*Sheets, blue anl., No. 13, Chicago	2.50	2.50	2.50	2.25
Sheets, galvanized, No. 24, Chicago	3.45	3.55	3.65	3.75
Plain wire, Pittsburgh	2.40	2.40	2.40	2.50
Wire nails, Pittsburgh	2.30	2.35	2.40	2.65
Tin plate, per base box, Pittsburgh	5.25	5.25	5.35	5.35

*Comparison for January, 1929, is with old blue annealed base, No. 10.

SCRAP				
Heavy melting steel, Pittsburgh	17.00	16.55	16.30	18.60
Heavy melting steel, eastern Pa.	14.50	14.50	15.13	16.30
Heavy melting steel, Chicago	13.00	12.65	13.05	16.00
No. 1 wrought, eastern Pa.	15.25	15.25	16.25	16.25
No. 1 wrought, Chicago	13.75	13.40	13.85	15.75
Rails for rolling, Chicago	14.75	14.65	15.30	17.50

Current Prices for Rolled Steel Products

STEEL PLATES

Pittsburgh, base	1.80c to 1.85c
Philadelphia, del.	2.00c to 2.10c
New York, del.	2.075c to 2.175c
Boston, del.	2.165c to 2.2265c
Chicago, base	1.95c to 2.00c
Cleveland, delivered	2.04c
Lackawanna, N. Y., base	2.05c to 2.15c
Birmingham, base	2.00c to 2.05c
Coatesville, Pa., base	2.00c to 2.05c
Pacific Coast, c.i.f.	2.30c
St. Louis, del.	2.17c
Detroit, del.	2.14c

STRUCTURAL SHAPES

Pittsburgh, base	1.80c to 1.85c
Philadelphia, del.	1.86c to 1.96c
New York, del	2.045c to 2.145c
Boston, del.	2.16c to 2.25c
Chicago, base	1.95c to 2.00c
Cleveland, delivered	2.04c
Lackawanna, N. Y.	2.05c to 2.15c
Birmingham, base	2.00c to 2.05c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	2.14c

BARS

SOFT STEEL

Pittsburgh, base	1.80c to 1.90c
Chicago, base	1.95c to 2.00c
Birmingham, base	2.00c to 2.05c
Lackawanna, N. Y., base	2.00c to 2.05c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.85c
Cleveland, del., outside mills	1.875c
Philadelphia, del.	2.17c to 2.22c
New York, delivered	2.19c to 2.24c
Boston, delivered	2.165c to 2.25c
Detroit, del.	2.085c
Pittsburgh, cold finishing	1.90c to 2.00c
Pittsburgh, forging quality	2.05c to 2.15c

RAIL STEEL

Chicago Heights	1.85c to 1.90c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	1.95c to 2.00c
New York, delivered	2.19c
Philadelphia, delivered	2.17c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.20c
Stock lengths from mill	1.95c
Chicago, billet, 30 tons and over	2.00c
Under 30 tons	2.40c
Chicago, rail steel	1.80c to 1.85c
Road and bridge work	1.90c to 2.00c
Philadelphia, cut lengths	2.42c to 2.62c

CORROSION, HEAT RESISTANT ALLOYS

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets....35.00c; plates....31.00c.; bars....28.00c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30% inc.

SHEETS

SHEET MILL BLACK, NO. 24

Pittsburgh, base	2.55c to 2.75c
Detroit, delivered	2.84c to 2.94c
Philadelphia, delivered	2.97c to 3.07c
Gary, Indiana Harbor	2.75c to 2.85c
Chicago, delivered	2.80c to 2.90c
Birmingham, base	2.90c
St. Louis, del.	3.17c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.90c to 3.00c
Gary, base	3.00c to 3.10c

GALVANIZED NO. 24

Pittsburgh, base	3.30c
Philadelphia, delivered	3.62c to 3.72c
Gary, Indiana Harbor	3.40c to 3.50c
Chicago, delivered	3.45c to 3.55c
Birmingham, base	3.45c to 3.50c
St. Louis, del.	3.72c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.25c
Chicago, district mills	2.45c
Chicago, delivered	2.50c
St. Louis, delivered	2.67c
Philadelphia, delivered	2.57c
Birmingham	2.45c to 2.50c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	2.10c
Chicago district mills	2.30c
Chicago, delivered	2.35c
Philadelphia, delivered	2.42c
St. Louis, delivered	2.52c
Birmingham	2.30c to 2.35c

AUTOMOBILE, NO. 20

Pittsburgh, base	3.90c
Detroit, delivered	4.09c to 4.19c

FURNITURE

Pittsburgh	3.90c to 4.00c

(*Turn to the following page*)

Chesapeake & Ohio, Pere Marquette and Hocking Valley railroads and 2150 by the Erie will shortly be added 2000 by the Seaboard Air Line and 1800 by the Louisville & Nashville. February looks like a 17,000-car month, compared with 4966 in January, 9710 in December and 13,196 in January, 1929. American Refrigerator Transit Co. is inquiring for 1000 refrigerator cars. New York Central has ordered 15 locomotives, with new locomotive inqiury totaling 22. At Chicago 12,000 tons of track fastenings was placed.

Automobile production, estimated at 275,000 units for January compared with 120,000 in December and 401,000 last January, will probably show a slight appreciation in the daily rate in February. The industry's steel requirements are spotty. Ford needs are more widely distributed as this maker continues its policy of decentralizing manufacturing. General Motors units as a whole are operating better than independents, and steelmakers with General Motors affiliations benefit accordingly.

Shape Awards Largest of Year

Structural steel awards this week approximated 61,000 tons, against 48,100 tons last week and 38,900 tons a year ago. Bridge work is developing in all districts. For its eastern electrification program the Pennsylvania railroad has bought 11,000 tons of structurals. On some sizes of bars and plates at Chicago deliveries are now four to six weeks deferred. Pending oil tank plate work at Chicago aggregates 25,000 tons. Fourteen thousand tons of plates will be bought for two Mallory Line steamers. Over 100,000 tons of plates may be placed soon for the Texas-Chicago line, with a 500-mile line in prospect. The reduction in the federal reserve discount rate may expedite its financing.

Ingot Rate Comes Back Rapidly

Emphasis in pig iron is on shipments rather than sales, to be expected at this season. Pittsburgh reports steelworks taking more iron. A Virginia pipemaker has closed on 15,000 tons. Pig iron prices generally are steady, as are those on beehive coke in the absence of forced sales. Despite the recent $1 reduction, semifinished steel, especially sheet bars and wire rods, is soft.

Pig iron's fractional gain in the daily rate of January over December was considerably bettered by steel ingots, the daily ingot rate of 140,234 tons in January comparing with 115,851 tons in December and 166,309 tons in January, 1929. In ingots as in pig iron, January was the first month since last May to record improvement. The Steel corporation's fifth consecutive gain in unfilled tonnage, as of Jan. 31, brought obligations to 4,468,710 tons, the highest since Feb. 28, 1926.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (February 12, 1930)	$35.24
Last week (February 5, 1930)	35.24
One month ago (January, 1930)	35.56
Three months ago (November, 1929)	36.03
One year ago (February, 1929)	36.28
Ten years ago (February, 1920)	65.63
Fifteen years ago (February, 1915)	22.21

Apparently denoting stabilization of prices, IRON TRADE REVIEW composite of iron and steel products is unchanged for the second consecutive week, at $35.24, after having declined continuously since early December.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted on Last Editorial Page—See Preceding Page For Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	1.90c
Delivered Detroit	2.19c
Hot strip 6¼ to 24-in., Pitts.	1.80c
Delivered Detroit	2.09c
Hot strip, bands 6 in. and under, Chicago	2.00c
Do. 6¼ to 24	1.90c
Cooperage stocks, Pittsburgh	2.10c
Do, Chicago	2.30c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 tons and over)	2.65c to 2.70c
Delivered, Detroit	2.885c
Worcester, Mass. (3 tons and over)	2.80c to 2.90c

ALLOY STEEL

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differentials	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 125-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
6100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds, squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same prices per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ in. x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Bars, drawn or rolled, Pitts., Chi., Buffalo, and Cleve. c.l.	2.10c
Do, delivered, Detroit	2.335c
Shafting (turned, polished) Pittsburgh, Buffalo	2.10c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.45c to 2.90c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland base

(Per 100 pound keg)

	Trade	Jobbers
Standard wire nails	$2.40	$2.80
Cement coated nails	2.40	2.80
Galvanized nails	4.40	4.80
(Per pound)		
Polished staples	2.85c	2.75c
Galvanized staples	3.10c	3.00c
Barbed wire, galvanized	3.05c	2.95c
Annealed fence wire	2.55c	2.45c
Galvanized wire	3.00c	2.90c

Anderson, Ind., $1 higher. Chicago $2 higher, Duluth, Birmingham $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Bright plain wire, 6 to 9 gage	2.40c
Spring wire	3.40c
Wire, delivered Detroit	2.535c
Nails, delivered Detroit	2.535c

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland base on products made there; Duluth $2 higher; Fairfield, Ala., $3 higher.

CUT NAILS, CHAIN, PILING

Cut nails, c.l., f.o.b. mills	2.55c
Cut nails, l.c.l., f.o.b. mills	265c
Sheet piling, base, Pittsburgh	2.20c

Chain proof BB and BBB, Pitts.

3/16-in. to ½-in.	33 1/3 and 5 off
9/16-in. to 1½-in.	33 1/3 off

CAST IRON WATER PIPE

Class B Pipe—Per Net Ton

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, New York	38.50 to 40.50
Four-inch, New York	41.50 to 42.50
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN PLATE; TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.25

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24	3.90c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, l.c.l., Chicago dist.	$6.80 to 6.90 off
Wrought, c.l., Chicago	$7.00 to 7.10 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$25.00 to 29.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, mills	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, mills	$41.50

BOLTS AND NUTS

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

Eagle list	60 to 70 off

MACHINE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

Lag screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off
Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 20, 10 and 5 with 2½ off in bulk.	
Tire bolts	60-5 off

Nuts

Semifinished	60 to 70 off

HEXAGON CAP SCREWS

Milled	80-10-5 off
Upset 1 in. diam. and smaller	85 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset 1 in. diam. and smaller	80-10-5 off

RIVETS

Struct., c.l., Pitts.-Cleve.	3.10c
Structural, c.l., Chicago	3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED STEEL

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$33.00
Pittsburgh, bessemer	33.00
Youngstown	33.00
Cleveland	33.00
Philadelphia	39.30
Chicago	35.00
Forging, Chicago	40.00
Forging, Pittsburgh	39.00
Forging, Philadelphia	44.30

SHEET BARS

Pittsburgh	$33.00
Youngstown	33.00
Cleveland	33.00
Chicago	35.00

SLABS

Pitts., Young.	$33.00
Cleveland	33.00

WIRE RODS

Pittsburgh, Cleveland	$40.00
Chicago	41.00
Youngstown	40.00

SKELP

All grades, Pittsburgh	1.85c to 1.90c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	9.00 to 10.00
Copper-free low phos. 58-65%	nominal

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 10-12% manganese	11.00 to 11.50
North African low phosphorus	12.50
Swedish basic, 65%	9.50 to 10.50
Swedish low phosphorus	12.00
Spanish and North African basic, 50 to 6% (nominal)	11.50 to 12.00
Newfoundland foundry, 55%	9.00
Tungsten future, short ton unit, duty paid	15.25 to 15.50
Chrome ore, 48%, net ton c.i.f.	$22.50

MANGANESE ORE

Prices, not including duty, are cents per unit; cargo lots.

Caucasian (52-55 per cent)	30 to 32 cents
Indian (48-50 per cent)	29 to 31 cents
Brazilian (46-48 per cent)	28 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east, tide., gross ton	$19.50 to 20.50

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	$40.00
Domes., Chewelah, Wash., base	22.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	$45.00

Pig Iron

Market Is Quieter, with Shipments Continuing to Increase Slowly—Large Melters Placing Small Orders—Sales Volume Shrinks

SALES of pig iron are subsiding while shipments continue slowly upward, surpassing the rate for the comparable period last month. Some furnaces are stocking iron and others are shipping from yard surplus, resumption of additional stacks not being in immediate prospect. Large melters are buying small tonnages, on a hand-to-mouth basis. Approximately 80 per cent of the normal quarter's output by Chicago district furnaces is under contract. Since a Virginia pipemaker placed 15,000 tons last week there have been no outstanding tonnages. An Indiana melter's order for 3000 tons for first half is an exception. Cleveland furnace interests' sales for the week totaled 20,000 tons, against 33,000 tons two weeks ago. Prices are fairly steady in most districts.

PITTSBURGH, Feb. 11.—Improvement in pig iron buying still is slow, with small orders comprising the bulk of current business. National Radiator Corp. placed several hundred tons of foundry iron remaining on its recent inquiry. Foundries generally are ordering iron only as needed. Shipments continue to gain moderately, steelworks taking heavier tonnages than a month ago. Furnaces are acquiring little backlog and current activity is insufficient to warrant lighting additional stacks. Producers are movng some iron from stocks. Prices continue steady, but in view of producers' desire for business and declines in some other districts, there is a question of strength on larger orders.

Boston, Feb. 11.—A total of 2500 tons of pig iron was sold in the New England district in the past week. The General Fire Extinguisher Co., Providence, R. I., mav increase its inquiry of 1000 tons to 2000 or 2500 tons. Some iron was reported sold as low as $16.50, Buffalo, for No. 2X. Furnaces east of Buffalo are meeting this price.

New York, Feb. 11.—Foundry iron demand shows a slight increase. A few large melters have improved their operating schedules, but the majority of the smaller foundries need work. Recent foundry iron purchases include 500 tons for American Locomotive Co., Schenectady, N. Y.; about 500 tons for the Phillipsburg, N. J., plant of Ingersoll-Rand Co.; 600 tons for Foran Foundry & Mfg. Co., Flemington, N. J., and 200 tons for Schenectady, N. Y., plant of General Electric Co. While some delivered prices figure to $16.50, base, Buffalo, most sales are at $17. Malleable usually brings 50 cents more.

Youngstown, O., Feb. 11.—Sales of malleable and No. 2 foundry pig iron are small. Shipments absorb most of the current production. No. 2 foundry and basic bring $18.50, valley, while bessemer and malleable hold at $19.

Cleveland, Feb. 11.—Current sales of pig iron continue downward while the volume of shipments is on the upgrade. Cleveland furnace interests have moved more tonnage to melters thus far in February than in the comparable period of January. The market is quieter, sales for the past week having tapered to 20,000 tons, in comparison with 25,000 tons in the week preceding and 33,000 tons in the week before, that which marked the high point since last fall. Inquiries are subsiding, the majority of melters having covered for this month. Larger demand for pig iron from Cleveland steelworks is making less iron available for the merchant market and Cleveland producers are not now going out of the local district to take small lots at $18, base. The nominal quotation for outside shipment continues $18.50, while $19, base, furnace, is the price for local delivery. The lake furnace price for northern Indiana and Michigan remains $19.50 to $20, base.

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts., dist. fur.	19.00
*Basic, del., Pitts.	19.63 to 20.13
Basic, del., eastern Pa.	19.00 to 19.50
Basic, Buff. fur. for local del.	18.00
Malleable, valley furnace	19.00
Malleable, Pitts., dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	19.00
Malleable, Chicago furnace	20.00
Malleable, Buff. fur. for local del.	19.00
Malleable, del. eastern Pa.	20.76 to 22.40
Malleable, Granite City fur.	20.00
No. 1 foundry, Chicago furnace	20.50
No. 2X, Eastern del., Phila.	21.76
No. 1X, Buff. fur. for local del.	20.00
No. 2 foundry valley furnace	18.50
No. 2 fdy., Pitts. dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	19.63 to 20.13
No. 2 plain Buff. fur. for local del.	18.50
No. 2 foundry, Chicago furnace	20.00
No. 2 fdy., Cleve. fur. for local del.	19.00
No. 2 fdy., Granite City	20.00
No. 2 plain, del., Phila.	20.76
No. 2 plain, Virginia furnace	17.75
No. 2 plain, Buffalo, del. Boston	21.41 to 21.91
No. 2, Brooklyn, Buffalo all rail	21.41 to 21.91
No. 2, Newark, N. J., Buff. all rail	19.78 to 20.28
No. 2 Ala., Bir. base, local del.	15.00
No. 2 Tenn., Bir. base, local del.	15.00
No. 2 Tenn., del. Cincinnati	17.19 to 18.19
No. 2 Alabama del. Cincinnati	17.19 to 18.19
No. 2 Alabama, del. Cleveland	20.51 to 21.01
No. 2 Alabama, del., Chicago	19.51
No. 2 Alabama, del., St. Louis	18.42 to 18.92
No. 2 Ala., Phila., dock dely.	18.25 to 19.25
No. 2 Ala., Balt., dock dely.	18.00 to 19.00
No. 2 Ala., N. Y., dock dely.	19.00
No. 2 Ala., Boston, dock dely.	20.21
No. 2X, Brooklyn, Buffalo all rail	21.91 to 22.41
No. 2X, Newark, Buff. all rail	20.28 to 20.78
No. 2X, eastern, del. Phila.	21.26
No. 2X, fdy., Buff. fur. for loc. del.	19.00
No. 2X, Buffalo, del. Boston	21.41 to 21.91
No. 2X, Virginia furnace	18.25
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila	24.76
Low phos., copper bearing fur.	23.00 to 24.00
Charcoal, Superior, del., Chicago	27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63.00c, 76.00c and $1.13 per ton.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$23.60
No. 1 foundry, del. Montreal	25.00
No. 2 foundry, del. Toronto	23.10
No. 2 foundry, del. Montreal	24.50
Malleable, del. Toronto	23.60
Malleable, del. Montreal	25.00
Basic, del. Montreal	23.50

Silvery iron, Jackson county, O., furnace in per cents: 5—$22; 6—$22 to $23; 7—$23 to $24; 8—$24 to $25; 9—$25 to $26; 10—$27 to $28; 11—$29 to $30; 12—$31 to $32; 13—$33 to $34.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$41; 16—$43.50; 17—$46.50.

Detroit, Feb. 11.—Demand for pig iron continues to expand excepting from jobbing foundries. January shipment by the more important producers in this district compared favorably with January, 1929. Releases for February indicate a slightly heavier tonnage than in January. A few melters have put some iron on the ground as a reserve because of exceptionally bad weather conditions but the average is light. Malleable and No. 2 foundry iron continue $19.50 to $20, base, Detroit furnace.

Cincinnati, Feb. 11.—Sale of 3000 tons of malleable iron to an Indiana consumer for first half was noted in the past week's business which totaled 8000 tons. This total was the largest since Jan. 1. All except 700 tons was northern iron. Several southern furnaces continue to quote $13.50, base, Birmingham, when meeting competition outside Cincinnati.

Chicago, Feb. 11.—Sales of pig iron are at the average volume of recent weeks, or about twice that of the first week in January. Shipments are improving moderately. Furnace stocks are being reduced, with five of the six available merchant stacks in this district operating. Inquiries emphasize prompt needs. Some estimates place tonnage under contract as more than 80 per cent of the normal output for first quarter. Little interest is noted in the second quarter. Less outside iron is being offered. The furnace price holds at $20, base. Silvery prices are irregular.

St. Louis, Feb. 11.—Sales and consumption reflect steady improvement in the pig iron situation. Additional foundries have resumed operations and schedules at others have been stepped up. During the past week pig iron

(*Concluded on Page* 87)

Coke

Demand Below Average Rate of Year Ago—Furnaces Taking Small Lots—Prices Are Steady

THE coke market is quiet though orders for foundry and domestic fuel in some districts have improved and tend to sustain prices. Sales of beehive furnace coke are in small lots at a time, and as recent surpluses have been removed the price is steadier at $2.60, Connellsville. Foundries on automotive castings are taking larger tonnages.

Pittsburgh, Feb. 11.—Demand for coke still leaves activity substantially below the rate of a year ago. Sales of furnace fuel are limited to a few carloads at a time, and while such demand is slightly heavier, prospects are poor for a marked upturn in the near future. Sellers are successful in holding standard furnace coke at $2.60. Recent absorption of surplus fuel is eliminating much of the incentive for forced sales. Foundries show a further slight gain in coke requirements, but demand for heating fuel remains seasonally light.

Production of coke in the Connellsville region for the week ended Feb. 1 was 31,190 tons, compared with 29,720 tons the preceding week and 60,120 tons in the same period a year ago, according to the *Connellsville Courier*.

Boston, Feb. 11.—Foundries continue buying coke on a hand-to-mouth basis, somewhat better than in the first two or three weeks of the year. Prices are unchanged.

New York, Feb. 11.—Specifications for foundry coke are reported improved here but new demand is small. Beehive foundry coke continues $3.50 to $3.75, Connellsville ovens, and $4.85, Latrobe ovens. Beehive furnace coke continues $2.50 to $2.75, Connellsville ovens. By-product foundry coke is $9 to $9.40, delivered, Newark, N. J.; $11 delivered at most New England points, and $9 delivered at Philadelphia.

St Louis, Feb. 11.—By-product coke interests report a fair increase in demand for metallurgical grades. Supplementary purchasing is being done by melters in the West and Southwest and there has been a fair volume of reordering by foundries in Northern Illinois and Iowa, notably implement and tractor manufacturers. Reserve stocks at ovens are smaller than at this time in 1929. Prices are steady.

Cincinnati, Feb. 11.—Demand for by-product foundry coke continues active. Shipments are considerably larger than last month. Satisfactory sales of domestic grades are reported.

Chicago, Feb. 11.—Shipments of by-product foundry coke are slightly ahead of January. Oven capacity is almost fully engaged. The price is unchanged at $8, ovens, and $8.75 for local delivery.

Birmingham, Ala., Feb. 11.—Coke producers are operating their ovens close to capacity. The Sloss-Sheffield Steel & Iron Co. has just completed a new screening plant at its North Birmingham plant. The base price of foundry coke holds at $5.

Coke Prices

Prices Per Net Ton

Beehive Ovens	
Connellsville furnace	$2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England del.	11.00
St. Louis del.	9.00
Birmingham, ovens	5.00
Indianapolis del.	8.25
Ashland, Ky., ov., Connell. basis	6.50
Portsmouth, O., ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit ovens	9.00
Philadelphia, del.	9.00

Ferroalloys

Ferromanganese Now Sold on Quantity Differential Basis

New York, Feb. 11.—The ferromanganese market now generally is on the basis of $99, duty paid, tidewater, for carloads, with differentials applying to large quantities. The new price is retroactive to Jan. 1.

The reduction in ferromanganese has not extended to spiegeleisen, which continues $34 furnace on the 19 to 21 per cent grade, subject to differentials on quantities. Shipments of ferromanganese and spiegeleisen continue to increase.

Tungsten is in a quiet but steady market. Light buying is offset by uncertainty of supplies. Imports last year were unusually large at 6,809,965 pounds, compared with 2,729,508 in 1928. The various special ferroalloys are unchanged.

Pittsburgh, Feb. 11.—Further improvement is noted in specifications for ferroalloys. Spot buying of ferromanganese still is light, with prices on old contracts adjusted to the new basis of $99 a ton for lots of 500 tons and less annually. This brings the Pittsburgh delivered price to a range of $98.79 to $103.79, compared with the former price of $104.79. Ferrochrome consumption continues ahead of the rate a year ago due to heavier production of chrome alloy steels.

Bolts, Nuts, Rivets

Seasonally Heavy Demand Holds to Recent Gains

NUT AND BOLT PRICES, PAGE 72

Pittsburgh, Feb. 11.—Specifications for bolts, nuts and rivets show little further increase but demand is holding its recent gain and is seasonally heavy. Buying is well diversified, with railroads, fabricating shops and jobbers contributing substantially. Prices continue steady at 60 to 70 off for bolts and nuts, and 3.10c Pittsburgh, for large rivets. Operations are slightly higher at 65 to 70 per cent.

New York, Feb. 11.—Bolt and nut demand is better but improvement is slow. Jobber buying is small. The only important tonnage now pending is 100 tons of bolts, nuts and tie rods for a government job near Wilmington, Del. The nut and bolt market continues firm and unchanged at 60 to 70 off. The rivet market may be quoted at 3.10c, base, Pittsburgh.

Philadelphia, Feb. 11.—The government's marine terminal development on Peapatch island, Delaware river, will require 100 tons of bolts, nuts and tie rods. Frederick Snare Corp. is expected to place more than 100 tons of bolts, spikes and miscellaneous equipment for Schuylkill river bulkheading, Philadelphia.

Cleveland, Feb. 11.—Nut, bolt and rivet manufacturers encounter improved market conditions. Orders are slightly more numerous and in some cases of automotive, railroad and jobber customers are larger. Consumer stocks are low, all orders being for work in hand. Operations stay at 60 to 65 per cent.

Chicago, Feb. 11.—Producer operations are about 70 per cent and advance shipping orders again indicate that the month may finish with specifications close to a year ago. Specifications are a shade under January.

Ferroalloy Prices

(In dollars, except Ferrochrome)

*Ferromanganese, 78 to 82 per cent tidewater, duty paid	$99.00
*Ferromanganese del. Pittsburgh	103.79
Spiegeleisen, 19 to 21 per cent, domestic furnace spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88.50
Do., 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.45 to 1.50
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producer's plant, net ton	160.00
Do., one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Carloads. Differentials apply to large quantities.

*These prices contract, spot $5 higher.

Scrap

Strength Developing in Prices—Supply Is Limited in Some Markets—Buying Is Heavier

HIGHER prices are being made in a number of instances, a reflection of dealer speculative interest in some cases and heavier buying by melters in others. Weather conditions and low prices have limited shipments from the country and industrial grades are not being produced in full volume.

Chicago, Feb. 11.—Stronger prices for iron and steel scrap reflect dealer speculative interest rather than consumer bookings. Sellers are resisting pressure for lower prices. Quotations on a number of grades are 25 to 50 cents higher. Brokers have paid $13.75, delivered, for heavy melting steel, but the range, based on latest consumer sales, is $13 to $13.50. Low phos scrap and forge shop grades are commanding higher quotations, the latter being somewhat scarce. Steel angle bars have advanced 50 cents to a range of $15.50 to $16, and a tonnage sale of hydraulic compressed sheets is reported at a top of $12.25. Cast borings are an exception to the general advance, and have dropped slightly. Two of the three local consumers are restricting shipments, and the other is out of the market temporarily.

Cleveland, Feb. 11.—No. 1 heavy melting steel is up 25 cents a ton here on the basis of a sale of approximately 2000 tons at $15 to the leading consumer. No. 1 steel is now quoted $14 to $14.50 and No. 2 at $13.25 to $13.75. Dealers are paying up to $15 for a selected grade of No.

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.50 to 13.00
Boston, dealers	10.50 to 11.00
Boston, No. 2	10.50 to 11.00
Buffalo, No. 1	14.50
Buffalo, No. 2	12.50 to 12.75
Chicago	13.00 to 13.50
Cincinnati, deal.	12.50 to 13.00
Cleveland, No. 1	14.00 to 14.50
Cleveland, No. 2	13.25 to 13.75
Detroit, No. 1 deal.	12.00 to 12.25
Detroit, No. 2 deal.	10.50 to 11.00
East Pa., del. mill	14.50
N. Y. deal R. R.	11.50 to 11.85
N. Y., deal. yd.	8.00 to 8.50
Pittsburgh, No. 1	16.50 to 17.00
St. Louis, No. 1	13.50 to 14.00
Valleys, No. 1	16.00 to 16.50

COMPRESSED SHEETS

Buffalo (dealers)	12.50 to 12.75
Chicago	11.75 to 12.25
Cleveland	13.00 to 13.50
Detroit, dealers	11.75 to 12.25
E. Pa. new mat.	13.00 to 13.50
Pittsburgh	16.00 to 16.50
Valleys	15.50 to 16.00

BUNDLED SHEETS

Buffalo	9.50 to 10.00
Cincinnati, deal.	10.25 to 10.75
Cleveland	10.75 to 11.25
Eastern Pa.	11.50 to 12.00
Pittsburgh	14.50 to 15.00
St. Louis	9.00 to 9.50

SHEET CLIPPINGS LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.00 to 8.50
Detroit, dealers	9.00 to 9.50
St. Louis	9.00 to 9.50

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Boston, dealers	9.50 to 10.50
Buffalo	18.25 to 18.75
Chicago (3 feet)	16.50 to 17.00
Chicago, 2 ft and under	18.00 to 18.50
Cincinnati, deal.	17.50 to 18.00
Detroit, dealers	16.00 to 16.50
Pittsburgh (3 ft.)	19.00 to 19.50
Pittsburgh, 2 feet and under	20.00 to 20.50
St. Louis	17.50 to 18.00

STOVE PLATE

Birmingham	11.00 to 12.00
Boston consumers	10.50 to 11.00
Buffalo	12.50 to 12.75
Chicago, net	10.75 to 11.25
Cinn., deal., net	8.75 to 9.25
Detroit, net, deal.	9.00 to 9.50
Eastern Pa.	11.50 to 12.00
N. Y., deal., mill.	7.75 to 8.00
St. Louis	11.50 to 12.00

COUPLERS, SPRINGS

Buffalo	18.25 to 18.75
Chicago	16.00 to 16.50
Eastern Pa.	19.50 to 20.00
Pittsburgh	20.50 to 21.00
St. Louis	14.50 to 15.00

ANGLE BARS—STEEL

Chicago	15.50 to 16.00
St. Louis	13.50 to 14.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	18.50 to 19.00
Cleve. billet and bloom crops	17.50 to 18.00
Eastern Pa.	20.00 to 21.00
Pitts. billet and bloom crops	22.00 to 23.00
Pitts. sheet bar crops	21.00 to 21.50

FROGS, SWITCHES, GUARDS

Chicago	14.25 to 14.75
St. Louis	13.50 to 14.00

SHOVELING STEEL

Chicago	13.00 to 13.50
Cleveland	11.50 to 12.00
St. Louis	12.50 to 13.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 11.00
Boston, dealers	10.50 to 11.00
Buffalo, No. 1	11.50 to 12.00
Buffalo, No. 2	14.00 to 14.50
Chicago, No. 1	13.75 to 14.50
Chicago, No. 2	13.00 to 13.50
Cincinnati, No. 2	12.50 to 13.00
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 2	16.50 to 17.50
St. Louis, No. 1	12.25 to 12.75
St. Louis, No. 2	12.50 to 13.00

SPECIFICATION PIPE

Boston	9.00 to 9.50
Eastern Pa.	14.00
New York, deal.	9.25 to 9.75

BUSHELING

Buffalo, No. 1	12.75 to 13.25
Chicago, No. 1	11.00 to 11.50
Cinn., No. 1 deal.	10.00 to 10.50
Cinn., No. 2	6.50 to 7.00
Cleveland, No. 1	12.00 to 12.50
Cleveland, No. 2	10.00 to 10.50
Detroit, No. 1 new deal.	11.00 to 11.50
St. Louis, No. 1	9.50 to 10.00
Valleys, new No. 1	15.00 to 15.50

MACHINE SHOP TURNINGS

Birmingham	6.00 to 7.00
Boston, dealers	6.00 to 6.50
Buffalo	9.25 to 9.75
Chicago	7.50 to 8.00
Cincinnati, deal.	8.00 to 8.50
Cleveland	10.25 to 10.75
Detroit	7.75 to 8.00
Eastern Pa.	11.00
New York, deal.	7.00 to 7.50
Pittsburgh	12.00 to 12.50
St. Louis	6.75 to 7.25
Valleys	11.50 to 12.00

MIXED BORINGS, TURNINGS

For blast furnace use

Boston, dealers	5.75 to 6.00
Buffalo	11.00 to 11.50
Cincinnati, deal.	8.75 to 9.25
Cleveland	10.50 to 11.00
Detroit, dealers	9.00 to 9.25
Eastern Pa.	11.00
New York, deal.	7.00 to 7.50
Pittsburgh	12.00 to 12.50

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	6.00 to 7.00
Boston, chem.	8.50 to 9.00
Boston, dealers	6.00 to 6.50
Buffalo	11.00 to 11.50
Chicago	9.50 to 10.00
Cincinnati, deal.	8.75 to 9.25
Cleveland	10.50 to 11.00
Detroit, dealers	9.00 to 9.25
Eastern Pa.	11.25
Eastern Pa., chem.	14.50
New York, deal.	7.00 to 7.50
Pittsburgh	12.00 to 12.50
St. Louis	9.50 to 9.75

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.00 to 11.50
Chicago, net	11.50 to 12.00
Cincinnati	9.50 to 10.00
Eastern Pa.	11.50 to 12.00
New York, deal.	7.50 to 8.00
St. Louis	11.50 to 12.00

FORGE FLASHINGS

Boston, dealers	8.50 to 9.25
Buffalo	12.50 to 12.75
Cleve. over 10 in.	11.50 to 12.00
Detroit	11.00 to 11.50

FORGE SCRAP

Boston, dealers	8.00 to 8.50
Chicago	17.50 to 18.00
Eastern Pa.	13.50 to 14.00

ARCH BARS AND TRANSOMS

Chicago, net	17.25 to 17.75
St. Louis	21.00 to 21.50

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	13.50 to 14.00
Chicago steelworks	10.50 to 11.00
Cleveland	12.00 to 12.50
Eastern Pa.	13.50
Pittsburgh	14.50 to 15.00
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	17.00 to 17.50
Boston, ship point	16.00 to 16.50
Buffalo	17.50 to 18.00
Chicago	18.20 to 18.75
Eastern Pa.	20.00 to 21.00
Pittsburgh	20.50 to 21.00
St. Louis	19.00 to 19.50

SHAFTING

Boston, ship point	14.00 to 14.50
Chicago	16.50 to 17.10
Eastern Pa.	19.00
New York, deal.	14.00 to 14.50
St. Louis	18.00 to 18.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	11.00 to 12.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel	18.00 to 18.50
Chicago, iron	14.00 to 14.50
Chi., rolled steel	17.00 to 17.50
Cincinnati	12.00 to 12.50
N. Y., iron, deal.	10.50 to 11.00
Pittsburgh, iron	15.00 to 15.50
Pittsburgh, steel	20.50 to 21.00
St. Louis, iron	14.00 to 14.50
St. Louis, steel	15.75 to 16.25

NO. 1 CAST SCRAP

Birmingham, cup.	12.00 to 13.00
Buffalo	14.50 to 15.00
Boston, textile	13.50 to 14.00
Chicago, mach.	15.10 to 15.70
Chicago, railroad	14.30 to 14.85
Chicago, agri.	13.15 to 13.70
Cincinnati, mach. cupolas, gross	18.25 to 18.75
Cleveland, cupola	15.00 to 15.50
Detroit, net, deal.	11.25 to 11.75
East Pa. cupola	15.50 to 16.00
N. Y. cup. deal.	10.85
N. Y., del. local foundries	15.00
Pittsburgh, cupola	14.50 to 15.00
San Fran., del.	13.50 to 14.00
Seattle	14.50 to 14.75
St. L. No. 1 mach.	14.50 to 15.00
St. Louis, No. 1	13.50 to 14.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	10.50 to 11.00
Cleve., breakable	11.50 to 12.00
Detroit, auto, net dealers	12.00 to 13.00
Detroit, break. deal	9.50
Eastern Pa.	14.00
New York, deal.	9.75 to 10.50
Pittsburgh	12.00 to 13.00

MALLEABLE

Boston, railroad	17.00 to 17.50
Buffalo	17.00 to 17.50
Chicago, agri.	13.75 to 14.25
Chicago, railroad	16.50 to 17.00
Cinn., R. R. deal.	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail	17.50 to 18.00
Detroit auto deal.	14.50 to 15.00
St. Louis, rail	13.75 to 14.25

Miscellaneous Scrap

RAILS FOR ROLLING

5 feet and over

Birmingham	13.00 to 14.00
Boston	10.50 to 10.75
Buffalo	14.00 to 14.50
Chicago	14.75 to 15.25
Eastern Pa.	15.00
New York	10.50 to 11.00
St. Louis	14.00 to 14.50

LOCOMOTIVE TIRES

Chicago, cut	18.00 to 18.50
St. Louis, No. 1	14.50 to 15.00

LOW PHOS. PUNCHINGS

Chicago	15.25 to 15.75
Pittsburgh	19.00 to 19.50

1 steel. Hydraulic compressed sheets are slightly more active, being quoted 25 cents higher at $13 to $13.50. Both machine shop and shoveling steel turnings are stronger.

Boston, Feb. 11.—Because orders have been nearly completed and new contracts are scarce there was a marked slowing down in the iron and steel scrap market during the past week. Prices are easier, with a decline of 50 cents a ton in chemical borings.

New York, Feb. 11.—Scrap prices are steady and unchanged. Little new business is noted. Shipments are largely against old orders. Skeleton continues steady at $7.25, dealers' buying price. Some export buying is being done for shipment from Boston and Brooklyn, while 2000 tons is at dock, Houston, Tex., for Japan.

Philadelphia, Feb. 11.—Buying of iron and steel scrap is principally in small moderate lots, with the price tendency slightly upward on some grades.

Pittsburgh, Feb. 11.—Scrap continues to show steady tone despite less active demand, with some grades moderately stronger. Heavy melting steel has developed a wide price range, with railroad scrap selling as high as $17.50. A nearby mill, it is understood, paid $17.40 for this grade on Pennsylvania railroad list. The last large sale of ordinary grade brought only $16.50, leaving the market quotable at $16.50 to $17.50. Blast furnace grades are more active but unchanged. Heavy cast and railroad steel specialties are strong at recent levels. Rails, 2 feet and under, are quotable at $20 to $20.50.

Cincinnati, Feb. 11.—Quotations on heavy melting steel and No. 2 wrought have been advanced 25 cents, with a stronger undertone in other grades, with the possible exception of cast. The market is only fairly active.

Detroit, Feb. 11.—Except for machine shop turnings and short shoveling turnings, which are down 25 cents a ton each, iron and steel scrap prices are unchanged this week. There is an easier tone, largely due to lack of demand from Youngstown and an increasingly quiet tone in the Pittsburgh district. Offerings of scrap from automotive plants continue to expand, several large supplemental lists having been issued, but the expansion this month is not expected to be as great as in January. The light open-hearth grade of turnings has become a drug on the market because users prefer heavy melting steel and compressed sheets.

St. Louis, Feb. 11.—There is a decided undertone of firmness in iron and steel scrap. While consumers are not buying heavily, they would do so if they could get tonnage at present prices. This is true particularly of steel mills. Dealers are having a hard time getting scrap from the country. The weather held up shipments for several weeks, and since the return of more moderate temperatures prices have not been sufficiently high to stimulate movement.

Birmingham, Ala., Feb. 11.—The iron and steel scrap market shows a little better feeling and more scrap is moving than for a long time. Price base is unchanged. Heavy melting steel is being brought into the district by barge service. This product is being delivered at from $10.50 to $13 and $13.50.

Toronto, Ont., Feb. 11.—The price revision announced last week appears to have cleared the air in iron and steel scrap and consumers are again entering the market and placing orders for immediate and future needs. Sales for the week jumped well ahead of those of former weeks this year and inquiries now appearing indicate more active business in the future.

Canadian Scrap

Dealers' Buying Prices

MONTREAL
Per Gross Ton

Iron axles	$19.00
Steel axles	17.00
Car wheels	14.50
Stove plate	12.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	14.00
Iron axles	16.00
Heavy melting steel	9.00
Turnings	7.00
No. 1 mach. cast (net)	15.00
Malleable (net)	11.50

Semifinished Steel

Market Is More Active—Wire Rods Reported Easier

SEMIFINISHED STEEL PRICES, PAGE 72

Pittsburgh, Feb. 11.—New buying in semifinished material is slightly more active following the recent reduction of $1 a ton on billets, sheet bars and slabs. Buyers of sheet bars are exerting considerable pressure against the current price, maintaining that the reduction in the price of sheets since the first of the year has more than offset the decline in semifinished material and that the profit margin is narrower than a year ago. Some reports are heard of lower prices on wire rods but the situation is claimed by producers to be no easier than formerly, and $40 generally is quoted. Specifications against contracts for all grades of semifinished material are heavier than a month ago but still lack the activity of last year.

Youngstown, O., Feb. 11.—Shipments of billets, slabs and sheet bars are increasing. Renewed activity of strip and sheet mills in this district has expanded demand. Independent open-hearth operations are gaining, 42 of 51 active. Billets, slabs and sheet bars bring $33, Pittsburgh and Youngstown.

Cleveland, Feb. 11.—Steady improvement is noted in demand for semifinished steel. The leading merchant producer operating 13 of its 14 open hearths has specifications for more than 11 days. New orders are small. Prices hold at $33, Cleveland and Youngstown, for sheet bars, billets and slabs.

Chicago, Feb. 11.—Consumers of semifinished material buying in the open market are pressing for shipments, which are delayed two to three weeks. Prices are unchanged and nominal at $35, base Chicago, for billets, slabs and sheet bars. Forging billets are $40, base, Chicago.

Operating Rates

Gains Recorded—District Average 80 To 85 Per Cent—Cleveland Leads

Cleveland—Rate is still high here with 30 out of 34 open-hearth furnaces producing. Ingot operation, while not only continuing at as high a percentage as any section, has specifications ahead.

Youngstown, O.—Mills are still gaining with the average this week at about 75 per cent. Youngstown Sheet & Tube Co. at 75 reports the largest gain while the Steel corporation is still at 70. Forty-two out of 51 open hearths are going and all bar mills are operating at 75, with pipe still low at 55.

Chicago—Ingot output is at 85 to 90 per cent, compared with 90 a year ago. The leading interest has 17 of 27 furnaces blowing, and 26 of the 36 total for this district are operating. Rail mills are now at capacity.

Pittsburgh—Steelmaking is engaged at about 75, with open-hearth production ahead of bessemer and slightly higher than a week ago. Sheet production continues at 65, and tin plate is higher at 70 to 75. Strip mills are more active at 55 to 65, with pipe production still low and unchanged at 40. In several instances finishing mill schedules are slightly higher.

New York—Eastern plants, including Maryland, Delaware and eastern Pennsylvania, are at an 80 per cent ingot production. Plates are at 60 to 65, structural shapes 75 to 85 and sheet and tin mills higher. Finishing schedules exhibit varying rates.

Buys Fabricating Plant in Birmingham, Ala.

Chicago, Feb. 11.—Negotiations have been completed for purchase by the Chicago Bridge & Iron Works of the Birmingham, Ala., plant of the Reeves Bros. Co. The latter will retain its Alliance, O., plant. The purchase adds to the southern market territory of the Chicago company such products as cylindrical tanks, creosoting cylinders, crude stills, rotary and vertical kilns, tank cars and various oil country equipment, with production of 4000 tons of fabricated steel monthly. The company will install additional equipment, making it a $1,500,000 fabricating plant.

M & V Tank Co., Wichita Falls, Tex., has increased capital to $225,000 to provide for expansion plans.

Bars

Buying for Prompt Delivery Brings Increased Tonnage—Prices Held at Firm Level

SPECIFICATIONS for soft steel bars are being received in sufficient volume to give better production rates, and at Chicago delivery is being pushed back, four to six weeks being needed in some sizes. No forward contracting is being done and all orders are for prompt delivery and immediate needs. Apparently unusually attractive specifications are needed for price concessions.

BAR PRICES, PAGE 71

Chicago, Feb. 11.—January specifications for bar mill products as a group are reported by a leading producer as 10 to 11 per cent ahead of a year ago. Deliveries are tighter on all finished products. Shipments on some bar sizes are being promised in four to six weeks. Contract sales show a slight gain over a week ago, and specifications are holding close to the weekly average of this year. Orders largely are spot, and no second quarter inquiry appears. Additional automotive and parts tonnage is being scheduled. Soft steel bars are 1.95c to 2.00c, Chicago.

New York, Feb. 11.—The steel bar market reflects a firmer tone as to price and shading of 1.85c, base, Pittsburgh, has disappeared except on highly exceptional preferential business. The general range on steel bars is 1.85c to 1.90c, base, Pittsburgh.

Pittsburgh, Feb. 11.—Steel bar specifications are maintained fairly well but show little improvement over a month ago. The January upturn exceeded expectations, however, and a lull at present is in line with predictions of a month ago. Bar mill operations hold at the improved rate of recent weeks but backlogs still are light. Consumers continue to place orders largely for prompt requirements, and forward tonnage is slow to develop. The market generally is 1.85c, Pittsburgh, with 1.90c applied only on smaller orders. Producers are attempting to hold the market at 1.85c, and 1.80c tonnages are scarce.

Cleveland, Feb. 11.—Shipments of merchant steel bars are more regular. Amounts specified are slightly larger than in January and the trend is more distinct toward improved conditions. Automotive consumption is expanding and other users are taking their share. The 1.85c, Cleveland, price is quoted on ordinary tonnages.

Detroit, Feb. 11.—Demand for soft steel bars continues to improve. Shipments into this district in February will show a moderate gain over January, but not as great as January over December. Automobile production continues irregular and a few users have curtailed, but on the whole improvement is noted. Soft steel bars are 1.85c, Cleveland or Pittsburgh base. Alloy steel bars continue 2.65c, mill, with considerable pressure upon the 75-cent extra for cold finishing.

Youngstown, O., Feb. 11.—Local independent steel bar makers last week operated 100 per cent for the first time this year. This week they have all mills operating except one. Carnegie Steel Co. is about 75 per cent active in its bar mills. A miscellaneous number of steel bar users have come into this market for supplies, which has added more strength to the quotational base, now 1.85c to 1.90c, Pittsburgh.

Philadelphia, Feb. 11.—Steel bar demand has improved and the price situation is better at 1.85c to 1.90c, base, Pittsburgh.

Retains Carlson Name

Reports that the Carlson Forgings Co., 1056 North Kolmar avenue, Chicago, had changed its name to Northern Forgings Co., arose from a legal technicality in the process of obtaining a new charter. The former charter was issued under the old 1872 law and was not recorded. The company under its present charter, recently issued, retains the name of Carlson Forgings Co., Northern Forgings Co. being used in obtaining the new charter and then immediately changed to the old name.

Plates

Market Slightly More Active—Eastern Demand Gains—More Refinery and Shipbuilding Work

SEVERAL substantial plate orders were placed during the week. The general run of business, however, is comprised of small, miscellaneous lots. A Chicago fabricator booked 2000 tons for refinery work in Texas. American Locomotive Co. placed 6000 tons for Chesapeake & Ohio locomotives. Two boats for Overseas Railways Inc., up for early action, will take 7000 tons each.

PLATE PRICES, PAGE 71

Chicago, Feb. 11.—Plate deliveries continue to lengthen, the minimum of shipments being ten days. Deliveries in some sizes are being promised in four to six weeks. About 25,000 tons in oil tank plates is outstanding, including about 3000 tons of new inquiry from Humble Oil & Refining Co. Paso-Tex Co. placed 2000 tons with a local fabricator for refinery work in Texas. The bulk of plate specifications is for car shops. The price range is 1.95c to 2.00c, Chicago.

Mills expect early release of 100,000 tons of plates for the Texas-Chicago gas line pipe contract awarded A. O. Smith Corp. last fall. Another large tonnage is in prospect for a 500-mile pipe line to be installed in northwestern Texas by the South Plains Pipe Line Co., subsidiary of the Prairie Oil & Gas Co.

New York, Feb. 11.—Continued improvement has enabled eastern plate mills to operate at 60 to 65 per cent. Standard Oil Co. of New Jersey has placed an order for 1000 tons for delivery to plant of the Imperial Oil Co. of Canada, at Sarnia, Ont. Sinclair Refining Co. has bought 250 tons for delivery at Marcus Hook, Pa. An order for 2100 tons has been placed by Texas Corp. for fabricated tanks. American Locomotive Co. ordered close to 6000 tons of tank, boiler and firebox plates for the 65 locomotives and 40 tenders for the Chesapeake & Ohio railroad. The largest business now in the shipbuilding market for early action involves two boats for Overseas Railways Inc., subsidiary of the Mallory line, New York. These boats are expected to take about 7000 tons of steel each. The Central Railroad of New Jersey has an inquiry out for 11 locomotives.

Pittsburgh, Feb. 11.—Incoming plate tonnage is fairly steady, but little increase is shown compared with demand a month ago. Additional freight car orders improve the outlook for continued demand from railroad equipment builders. Large-diameter line pipe projects, however, are slow to develop. Recent barge awards involve about 600 tons of plates and shapes. Prices show a steadier tone, with producers holding generally to 1.85c, Pittsburgh. Occasional tonnages are placed at higher and lower prices.

Cleveland, Feb. 11.—Plate tonnages are small. Hammond Iron Works was awarded five tanks for Procter & Gamble Co., Port Ivory, N. Y., requiring 510 tons. More locomotive boiler and fire box tonnage will be forthcoming from Lima Locomotive Works on an order it has received for ten engines from New York Central for the Boston & Albany division. Texas Corp. placed 400 gasoline station tanks with two southern fabricators and is in the market for 200

18 or 20-foot tanks of similar type for more northerly locations. Instances are becoming more numerous where 1.80c, base, Pittsburgh, has applied on medium size tonnages, but in many cases 1.85c still prevails.

Philadelphia, Feb. 11.—Plate prices are being more generally revised to 1.90c, Coatesville, and 1.80c, Pittsburgh. Prices below these figure are exceptional. Demand has improved and eastern mills are operating at 60 to 65 per cent.

CONTRACTS PLACED

2500 riser plates, Norfolk & Western railroad to Illinois Steel Co.
2000 tons, oil tank plates for Paso-Tex Co., to unstated fabricator.
1000 tons, freight cars for Chicago, Milwaukee, St. Paul & Pacific railroad, by Pacific Car & Foundry Co., to Pacific Coast Steel Co. and United States Steel Products Corp.
1000 tons, oil storage tanks for Shell Oil Co., to various Seattle and Portland, Oreg., jobbing houses.
500 tons, 200 gasoline station tanks, Texas Corp., for southern installation, to Chattanooga Boiler & Tank Co.; small tonnage for flanged heads to Lukens Steel Co.
500 tons, 200 gasoline station tanks, Texas Corp., for southern installation, to Birmingham Tank Co.; small tonnage for flanged heads to Lukens Steel Co.
500 tons, five tanks for Procter & Gamble Mfg. Co., Staten Island, N. Y., to Hammond Iron Works.
450 tons, three coal barges for Monessen Coal & Coke Co.; to McClintic-Marshall Co.
200 tons, syphons for Grandview, Wash., project, to unstated Portland, Oreg., interest.
160 tons, plates and shapes, two hulls for La Crosse Dredging Co., La Crosse, Wis.; to American Bridge Co.

CONTRACTS PENDING

6000 tons (sheet piling) marine terminal improvement for United States government, Peapatch island, Delaware river.
3000 tons, oil refinery work for Humble Oil & Refining Co.
500 tons, 200 gasoline station tanks, Texas Corp., for northern installation; bids in.

Wheeling Steel To Show Large Surplus

Annual report of the Wheeling Steel Corp., which will not be issued until about March 1, according to Secretary H. P. Beswick, is expected to show a large increase in earnings for 1929 compared with 1928. Wheeling Steel's net profit in 1929, according to the estimate of Hazlet & Burt, investment bankers, will amount to $8,005,664, equivalent to $29.08 a share on the combined A and B preferred stock and to $13.58 a share on the common stock. Net income for 1928 was $6,443,739, equivalent to $23.41 on the preferred and $9.60 on the common stock. This represents an increase in net profit of $1,561,925, equivalent to 24.2 per cent. The figures for 1928 showed a 60 per cent increase compared with those for 1927, which totaled $4,028,916, or $3.48 a share.

November production of automotive units in Canada was 35 per cent under October and 20 per cent under November, 1928.

Pipe

Utility-Municipality Buying Slower, but More Expected—Prices Much Firmer—5332 Tons Placed

COASTAL states are furnishing most cast pipe activity, 2812 tons being awarded in California; 1660 tons in New York-New Jersey, and 1310 tons being up in Massachusetts. Utility buying has slowed up somewhat but early buying is expected. Increased price strength particularly in the East is causing some municipalities to get under cover. Prices advanced $1 or $2 a ton.

PIPE PRICES, PAGE 72

New York, Feb. 11.—Cast iron pipe prices are slightly firmer, $37, eastern foundry and better, being done on several fair-sized tonnages. Municipal buying drags. Bids are in on 600 tons water pipe for Springfield, Mass. Utility inquiry has also slowed up, although several thousand tons are due to be placed this week. Donaldson Iron Works was low on 360 tons of 30-inch for Yonkers, N. Y. Two foundries divided 700 tons of 4 to 12-inch for a utility. The Barren Island airport project calls for 350 tons of various sizes, bids being in.

Boston, Feb. 11.—Cast pipe market continues consistently strong, with prices being marked up another $1 to $2 a ton on all sizes last week. A variety of business is appearing, many towns and municipalities getting active as prices advance. Tonnages usually run 250 to 460 tons. One foundry is sold up on first quarter output and has good prospects for the first half. Private business remains at a high level. Prices are $48.10 to $50.10 for 4-inch, $43.10 to $44.10 for 6 to 12-inch, $42.10 to $44.10 for larger, with customary $4 differential for class A and gas pipe.

Pittsburgh, Feb. 11.—What change is noted here in business in tubular products is for the better, although the upturn in demand for welded material has been slight. Oil producers' requirements of seamless material continue light, with drilling operations generally slow. Operations of welded pipe mills continue restricted by the lack of business in large-diameter lap-welded pipe. Although pending line pipe projects are reported fairly active, awards still are lacking. The South Plains Pipe Line Co., subsidiary of the Prairie Oil & Gas Co., will install a 500-mile line in northwestern Texas. Recent activity in locomotive awards improves the outlook for locomotive tubing, while boiler tubing continues fairly active. Mechanical tubing demand still is slow. Operations continue at 40 per cent.

Chicago, Feb. 11.—Private buying of cast pressure pipe from public utilities, industrials and railroads is in fair volume, despite light individual orders. Contractors are taking some tonnage for spring laying. In general, the municipal demand in North Central markets is disappointing. Small diameter pipe is in more popular demand than larger, most recent orders having been for material under 12-inch. Rochester, Minn., ordered 150 tons of 6 and 8-inch, and Huron, S. D., purchased 200 tons of 6 to 12-inch. For lots of 6 to 24-inch under 200 tons, the price is $38, base Birmingham, while $37, base, is named for orders over 200 tons in municipal buying.

Youngstown, O., Feb. 11.—Specifications on several large line pipe jobs, closed some time ago, have been slow to materialize. Delay doubtless has been due to slow financing of the projects. Lowering of six federal reserve discount rates, however, may pave the way for quick results in this connection. Pipe mills, now about 55 per cent active, are certain to have higher rates within 30 or 45 days.

Birmingham, Ala., Feb. 11.—Continued activity is noted at cast iron pressure pipe shops. New lettings are received regularly. Output is higher than in some time. Pipe shops are placing more orders for pig iron and scrap, asking early deliveries, Base price is held at $37 to $38 on 6-inch and larger.

CONTRACTS PLACED

10,000 lineal feet, 4 to 6-inch, for Bay City, Mich., to unstated producer.
1694 tons, 2 to 10-inch class B, Downey County Water Works District, Downey, Calif., to Lee R. Weber, Southgate, Calif.
1000 lineal feet, 6 to 24-inch, for South Bend, Ind., to unstated producer.
700 tons, 4 to 12-inch, for Stone & Webster, to Warren Foundry & Pipe Co. and Lynchburg Foundry Co.
635 tons, 6-inch class 150, Los Angeles, specification No. 1287, allocated as follows: 318 tons to Pacific States Cast Iron Pipe Co., and 317 tons to National Cast Iron Pipe Co.
600 tons, 6 to 8-inch, Mountain Lakes, N. J., to R. D. Wood & Co.
500 tons, 6 to 12-inch, for Minneapolis, to American Cast Iron Pipe Co.
383 tons, 12-inch class B, Santa Fe Irrigation District, Oceanside, Calif., to United States Pipe & Foundry Co.
360 tons, 30-inch, Yonkers, N. Y., to Donaldson Iron Works.
200 tons, 6 to 12-inch pipe, Huron, S. D., to American Cast Iron Pipe Co.
150 tons, 6 and 8-inch pipe, Rochester, Minn., to American Cast Iron Pipe Co.
100 tons, 6 to 10-inch class B, job No. 23, Southgate, Calif., to Edward Johnson & Sons.

CONTRACTS PENDING

1500 tons, 4 to 24-inch pipe for Erie, Pa.; bids closed Feb. 11.
600 tons, 6 to 8-inch for Springfield, Mass.; bids in.

710 tons, Taunton, Mass., including 460 tons 8-inch and 250 tons 12-inch; bids opened Feb. 11.
350 tons, various sizes, for Floyd Bennett air field, municipal airport, Barren Island, N. Y.; bids in.
250 tons, 6 to 12-inch, Concord, N. H.; bids opened Feb. 11.
135 tons, 6 to 12-inch class B, improvement Tamarak street, San Diego, Calif.; bids opened.
Unstated tonnage, Appleton, Wis., closes bids Feb. 17 on 10,000 lineal feet of 6-inch, class 150 centrifugal pipe.

Tin Plate

April Specifications Coming In—Production Increased

TIN PLATE PRICES, PAGE 72

Pittsburgh, Feb. 11.—Tin plate specifications are heavier, with orders being received for April shipment. Producers have acquired little backlog but are able to hold operations at a good seasonal level through regular incoming orders. Production is higher at 70 to 75 per cent. The current rate is expected to be improved moderately over the remainder of the quarter, with improved specifications looked for with the approach of the more active season in canning and canmaking. A few remaining contracts are being signed from time to time, with the market continuing $5.25 per 100-pound base box, Pittsburgh.

Fluorspar

Foreign Grades Being Offered Below Former Prevailing Price

FLUORSPAR PRICES, PAGE 72

New York, Feb. 11.—Offerings of foreign fluorspar for 1930 are being made below $21, duty paid, which hitherto has been quoted. The current market on foreign fluorspar of 85 and 5 per cent may be quoted at $19.50 to $20.50 per gross ton, duty paid. As low as $19, duty paid, has been named. So far there has been no actual contracting for 1930.

Crucible Steel Profit Is Larger in 1929

The Crucible Steel Co. of America, New York, and its subsidiaries show a preliminary report for 1929 that net profit for the year was $8,162,343, after allowance for federal taxes, depreciation, interest and other charges. This compares with $5,634,417 for 1928 and is equivalent to $11.66 a share on the 550,000 shares of common stock outstanding against $7.06 a share in 1928. Surplus at the close of 1929 was $2,012,383, compared with $996,967 for 1928 and $567,207 for 1927. Horace Wilkinson, chairman, in presenting the report, takes a conservatively optimistic view of the 1930 outlook.

Grand Rapids Welding Supply Co., Grand Rapids, Mich., has increased capital from $50,000 to $100,000.

Sheets

Tonnage Increasing Slightly—Eastern Mills Step Up Operations—Firmer Tone in Market

A BETTER feeling prevails among sheet producers, many reporting demand on the upgrade. Automotive tonnage is increasing, the market for electrical sheets is good, but sales to furniture manufacturers have dropped. Eastern mills are operating at capacity. In other districts the average has not changed much. Makers are seeking to establish prices firmly.

SHEET PRICES, PAGE 71

Pittsburgh, Feb. 11.—Sheet tonnage has shown a slight improvement recently but business still is insufficient to provide producers with operations of better than 65 per cent. This is accounted for largely by continued light demand from automotive interests. Several motor car builders are taking sizable tonnages. Other sheet consuming interests are operating only slightly below the average of a year ago, while the farm implement and freight car building industries are taking sheet tonnages at about last year's volume. Sheet prices are fairly steady and there are intimations that advances will be announced soon. Black sheets generally are 2.65c, Pittsburgh, with single carloads in some cases commanding 2.75c. Galvanized is 3.30c, with jobbers generally not receiving the former differential of $2 a ton. Blue annealed is holding at 2.25c for 13-gage sheets and 2.10c for plates. Autobody sheets generally are 3.90c.

New York, Feb. 11.—The sheet market reflects a more satisfactory tone and most of the eastern sheet capacity is fully engaged. The rate of demand is steady. One important eastern producer is sold up for the entire first quarter on blue annealed and is scheduled for most of the quarter on black and galvanized. Blue annealed sheets continue 2.10c, base, Pittsburgh, on heavy gages and 2.25c on lighter gages. Black sheets continue 2.65c to 2.75c and galvanized sheets 3.30c to 3.40c. The level of prices is unchanged, but the higher prices in the ranges are being done oftener. On some second quarter inquiries for black sheets 2.75c has been quoted.

Cleveland, Feb. 11.—Releases against sheet contracts are more numerous from the automotive industry. One local body builder is taking out large tonnages to sustain its daily output of 5000 jobs. While 3.90c, Pittsburgh, has been done on furniture sheets an effort is being made to hold the market at 4.00c. Jobbing mills attempt to obtain 2.10c on No. 10 blue annealed but continuous mills go to 2.00c and even lower. Some 2.55c prices still are encountered in black, and 3.30c is easy to uncover on galvanized. In more than one instance 3.25c was done.

Cincinnati, Feb. 11.—An unusual number of orders for rush deliveries are being reported by district sheet mills, causing an upturn in production schedules. A southern Ohio consumer is inquiring for 600 tons of black sheets for highway markers.

Detroit, Feb. 11.—Specifications for sheets continue spotty but denote improved automotive consumption. Releases for March shipment indicate a decided gain over February, which in turn will show improvement over January. It is noticeable that makers want to restrict present levels to the first quarter. Some producers claim firmness for 3.90c, base, Pittsburgh, for full finished sheets, while others say they have encountered shading. Black sheets generally are 2.55c, base, Pittsburgh, with an apparent tightening by producers.

Chicago, Feb. 11.—Blue annealed sheets are active, but demand for black and galvanized is irregular. Galvanized sheets again have been reduced $1 to $2 a ton and are being quoted 3.40c to 3.50c, Chicago district mills. Producers are operating at about 60 per cent. Mill quotations for No. 24 black sheets are slightly stronger at 2.75c to 2.85c, and blue annealed sheets are unchanged at 2.45c, mills, for No. 13, and 2.30c for No. 10 gage.

St. Louis, Feb. 11.—Sheet jobbers have placed orders in anticipation of spring demand and the outlet through the general manufacturing trade is gradually expanding. The leading local producer is operating its sheet department at 100 per cent. Prices are unchanged.

Youngstown, O., Feb. 11.—The volume of new business coming to independent sheet mills is tending to increase. Current specifications have dropped slightly, reducing mill activities here this week to 66 per cent of capacity against 69 per cent last week. A number of makers of automotive parts continue to place large tonnages of full-finished sheets. New business is being taken at 3.90c for autobody and 4.00c for furniture grades. Local makers show no interest in outside offers of black sheets below 2.65c, Pittsburgh, and are taking carload orders at 2.75c. Blue annealed are 2.10c to 2.20c and 2.25c to 2.30c, while galvanized are 3.30c to 3.40c.

Philadelphia, Feb. 11.—Sheet demand continues to increase gradually. While prices are unchanged sellers are more cheerful. Blue annealed now appears firm at 2.10c to 2.25c on the majority of sales. Black sheets are 2.65c to 2.75c, and galvanized 3.30c to 3.40c.

Structural Shapes

1929 Overage Being Wiped Out—Bridges Supplant Apartments in Importance—Prices Appear Steadier—Subways Promise Tonnage

MOMENTUM gradually is being acquired in the structural market. Awards are creeping up to the 1929 rate. Of aid this week in decreasing the spread between the total this year and the comparable 1929 aggregate are more than a dozen bridge projects, involving in excess of 22,000 tons, topped by Pennsylvania's electrification program calling for 11,000 tons of signal bridges. Other awards include a 5100-ton industrial project in Tennessee and several others down to 1000 tons. Jobs let involving less than 1000 tons are fairly numerous. Prospects are bright because of the presence of numerous inquiries in the 100 to 2000-tons range. A postoffice at Milwaukee and a Y. M. C. A. building at Chicago each will take 2000 tons. Three subways at New York are up.

STRUCTURAL SHAP E PRICES, PAGE 71

Chicago, Feb. 11.—Fresh structural inquiry is more active, about 8000 tons having appeared on inquiry. Nearly half is for public utility and railroad bridge work. Light shapes for the car building shops constitute the most important tonnage now. Several structural fabricators in this district virtually have no backlogs. Heavy building work, however, is more promising for the future. It is announced that $5,000,000 may be spent this year for World's Fair work. Contemplated additions for Western Electric Co.'s plants suggest expenditures of $3,500,000. Structural mill operations are about 70 to 75 per cent. Plain material is quoted 1.95c to 2.00c, Chicago.

Chicago, Burlington & Quincy railroad is expected soon to buy 7000 tons of structural material for Chicago grade separation work.

Boston, Feb. 11.—Fabricators maintain their optimism although few contracts appear directly ahead. Boston & Maine railroad placed 367 tons for three bridges. A bank building addition here, 2000 tons, will be awarded within the next few days.

New York, Feb. 11.—The New York Structural Steel Board of Trade announces that awards for the metropolitan district, exclusive of bridges, subways, etc., in January totaled 34,951 tons, against 27,000 tons in January a year ago. The December total was 105,711 tons. Lettings slumped this week and inquiry is smaller. Construction plans filed last month fell far below the recent rate. Three subway sections remain to be placed. A 45-story office building on uptown Broadway is expected to come out for bids soon. About 2400 tons for the Empire State building will be fabricated by the McClintic-Marshall Co., this tonnage being included in the original total reported here last December. Mills operate about 85 per cent. Fabricators have large backlogs. Prices are fairly steady on smaller tonnages.

Philadelphia, Feb. 11.—Structural shape demand continues to improve slightly with eastern mills operating 75 to 85 per cent. Prices on plain standard shapes usually are 1.80c to 1.90c, base, eastern mill, subject to lower prices on desirable tonnages.

Pittsburgh, Feb. 11.—Structural shape awards are slow to broaden although several large individual lettings furnished a fair aggregate tonnage. Plant improvement work for Republic Iron & Steel Co. at Youngstown, and a bridge for the Pennsylvania railroad at Oil City, Pa., involve 2800 tons and 2900 tons, respectively. Medium size lots are few and orders of less than 100 tons show little improvement. Considerable pending work remains to be placed but inquiry is only moderate. The market for plain material generally is 1.85c, Pittsburgh, with lower prices heard more infrequently. It is claimed that the 2000-ton laboratory building awarded American Bridge Co. by the Westinghouse Electric & Mfg. Co., as noted here last week, is the first shop-welded job of this size to be let.

Cleveland, Feb. 11.—Structural shape awards are almost at a standstill locally. Any that do materialize involve less than 90 tons. A Western Reserve university service building, 400 tons, is up for closing today. Highway and grade elimination bridges in Ohio and New York furnish fair tonnages. Little or no progress is reported on the large amount of civic work projected during recent months, which may take definite form in the early spring. On ordinary tonnages, 1.85c, base, Pittsburgh, is the prevailing quotation but preferential tonnage buyers obtain their material for less.

Birmingham, Ala., Feb. 11.—Additional structural awards keep fabricating shops active. Ingalls Iron Works Co. has the 1080-ton contract for the First National Bank building at Atlanta Ga.

CONTRACTS PLACED

11,000 tons, signal bridges, electrification program, Pennsylvania railroad, Trenton, N. J., to New York; 8000 tons to American Bridge Co.; 1800 tons to McClintic-Marshall Co.; 715 tons to American Car & Foundry Co., and remainder to Belmont Iron Works.

8000 tons, Lincoln-Liberty building, Philadelphia, to American Bridge Co.

5100 tons, buildings, Aluminum Co. of America, Alcoa, Tenn., to McClintic-Marshall Co.

5000 tons, office building 21 West street, New York, to Levering & Garrigues Co.; noted last week as going to unstated fabricator.

3190 tons, transmission towers, Northern Indiana Public Service Co., Indianapolis, to McClintic-Marshall Co.

Awards Compared

	Tons
Awards this week	60,662
Awards last week	48,082
Awards two weeks ago	44,063
Awards this week in 1929	38,903
Average weekly awards, 1930	34,582
Average weekly awards, 1929	38,603
Average weekly awards, Jan.	26,666
Total awards to date, 1929	245,422
Total awards to date, 1930	242,074

2900 tons, Pennsylvania railroad bridge at Oil City, Pa., to McClintic-Marshall Co.

2800 tons, reinforcing open-hearth furnace buildings, Republic Iron & Steel Co., Youngstown, O., to McClintic-Marshall Co.

2640 tons, Chestnut and Walnut street bridge, Philadelphia, 2440 tons to Shoemaker Bridge Co. and 200 tons to American Bridge Co.

2200 tons, 14-story addition Curb Exchange building, Greenwich street, New York, to Shoemaker Bridge Co.

2000 tons, Haynes avenue bridge, Newark, N. J.; reported placed with American Bridge Co.

1700 tons, bridge, Pere Marquette railroad, Detroit, to McClintic-Marshall Co.

1200 tons, hotel, Kansas City, Mo., to Kansas City Structural Steel Co.

1080 tons, First National bank, Atlanta, Ga., to Ingalls Iron Works Co. through Barge-Thompson, general contractors.

1040 tons, office building, Healey Real Estate & Improvement Co., Atlanta, Ga., to Virginia Bridge & Iron Co.

1000 tons, shapes for freight cars, Chicago, Milwaukee, St. Paul & Pacific railroad, to Pacific Coast Steel Co., and United States Steel Products Co., through Pacific Car & Foundry Co.

900 tons, warehouse, Jersey City, N. J., to Lehigh Structural Steel Co.

825 tons, office building, Norfolk & Western railroad, Roanoke, Va., to Virginia Bridge & Iron Co.

800 tons, bridge spans for Northern Pacific railroad, to American Bridge Co. and Milwaukee Bridge Co.

750 tons, 14-story apartment, Irving place and East Nineteenth street, New York, to Lehigh Structural Steel Co., through Gramercy Development Co.

700 tons, bridge, Southern Pacific railroad in California, to Virginia Bridge & Iron Co.

640 tons, 290-foot swing span bridge, St. Louis, Southwestern railroad, to Kansas City Bridge Co.

625 tons, building, Southern Phosphate & Chemical Co., Bartow, Fla., to Nashville Bridge Co.

600 tons, Olney avenue bridge, Philadelphia, to Bethlehem Steel Co.

600 tons, bridge, Norfolk & Western railroad, to Virginia Bridge & Iron Co.

500 tons, superstructure for pier, Canadian National railroad, Vancouver, B. C., to Western Bridge Co.

500 tons, laundry, Canadian Pacific railroad, Victoria, B. C., to Dominion Bridge Co.

490 tons, East Thornton avenue viaduct, Akron, O., to Burger Iron Co.

465 tons, plant, Gulf States Steel Co., Alabama City, Ala., to Virginia Bridge & Iron Co., and

Nashville Bridge Co.
450 tons, bridge over San Joaquin river for Santa Fe railroad, to American Bridge Co.
400 tons, pier, Canadian National railroad, Vancouver, B. C., to unstated interest.
367 tons, three bridges, Boston & Maine railroad, southern division, to Bethlehem Steel Co.
350 tons, signal towers, Park avenue viaduct, and bridge railings at West Sixty-seventh street, New York, for New York Central railroad, to Pittsburgh Bridge & Iron Works.
300 tons, New York Central railroad grade crossing elimination near Buffalo, to McClintic-Marshall Co., through Walsh Construction Co.
290 tons, New York Central railroad grade crossing elimination near Buffalo, to American Bridge Co.
290 tons, alterations, Washington bridge in New York state, to McClintic-Marshall Co.
250 tons, railroad bridges for Northern Pacific, to Milwaukee Bridge Co.
250 tons, Hinds county court house, Jackson, Miss., to Virginia Bridge & Iron Co.
250 tons, Seton school, Baltimore, to Dietrich Bros.
245 tons, bridge over Yellowstone river, Gardiner, Mont.; general contract to Stevens Bros.; steel to unstated interest.
240 tons, building, Bayer Co. Inc., Rensselaer, N. Y., to McClintic-Marshall Co.
200 tons, Harrison avenue viaduct, Butte, Mont., for Northern Pacific railroad, to unstated interest.
200 tons, Spring Grove state hospital, Catonsville, Md., to Dietrich Bros.
200 tons, ore bins, Edgar Zinc Co., Cherryvale, Kans., to Kansas City Structural Steel Co.
200 tons, apartment, O'Farrell and Franklin streets, San Francisco, to Golden Gate Iron Works.
190 tons, garage, Pacific Telephone & Telegraph Co., Sacramento, Calif., to Pacific Coast Engineering Co.
185 tons, St. Aloysius church, Detroit, to Whitehead & Kales Co.
170 tons, First Methodist church, Evanston, Ill., to A. Bolter's Sons.
165 tons, apartment, Buchanan and Pacific streets, San Francisco, to McClintic-Marshall Co.
150 tons, ferry slip, Mission Bay, San Francisco, for Southern Pacific railroad, ot McClintic-Marshall Co.
150 tons, addition for Western Printing & Lithographing Co., Racine, Wis., to Milwaukee Bridge Co.
150 tons, grade crossing elimination bridge, Tully, N. Y., for Delaware, Lackawanna & Western railroad, to American Bridge Co.
135 tons, Alabama Union building, Tuscaloosa, Ala., to Nashville Bridge Co.
130 tons, Cayuga street bridge, Philadelphia, to McClintic-Marshall Co.
110 tons, Blum building, 624 South Michigan avenue, Chicago, to Duffin Iron Co.
100 tons, boiler house, British Columbia Electric Co., Vancouver, B. C., to Western Bridge Co.
100 tons or more, novitiate for Franciscan Fathers, Ellicot City, Md., to Dietrich Bros., through North-Eastern Construction Co., Baltimore, general contractor.
100 tons or more, store building, Fred Sanders, Highland Park, Detroit, to Palmer Bee Co.
100 tons, building, American Commercial Clock Co., Pekin, Ill., to Illinois Steel Bridge Co.

CONTRACTS PENDING

7000 tons, grade separation and track elevation work in Chicago for Chicago, Burlington & Quincy railroad.
4000 tons, office building, Peen Mutual Life Insurance Co., Philadelphia; contractors, Doyle & Co.
3000 tons, Mayflower hotel, Akron, O.; plans out.
3000 tons or more, state capitol building, Charleston, W. Va.; bids being taken.
2000 tons, Victor Lawson Memorial Y. M. C. A., North Dearborn street, Chicago.
2000 tons, addition to Milwaukee post office; bids on general contract close March 5.
1600 tons, power plant, at Bagnelle, Mo.
1000 tons, bridge, Boston & Maine railroad.
1000 tons, Southwestern Bell Telephone Co. building at Beaumont and Olive streets, St. Louis.
1000 tons, postoffice, Scranton, Pa.
800 tons, bridgework for Chicago Great Western railroad.
700 tons, state buildings, Pennhurst, Pa.
700 tons, Hibernia street viaduct, Milwaukee, for Milwaukee Electric Railway & Light Co.; bids in.
600 tons, hospital, Thirty-fourth and Pine streets, Philadelphia.
500 tons, bridgework for St. Louis-San Francisco railroad.
500 tons, plant addition, Procter & Gamble, Staten Island, N. Y.
400 tons, service building, Western Reserve university; bids opened Feb. 11.
270 tons, library, Berkeley, Calif.; bids opened.
170 tons, office building, Salinas, Calif.; bids opened.
150 tons, Farm Creek channel bridge at East Peoria, Ill.; Milwaukee Bridge Co., low bidder.
Unstated tonnage, Y. M. C. A. building, Stamford, Conn.
Unstated tonnage, hospital addition, Troy, N. Y.

Concrete Bars

East Dull—West Quite Active—Chicago Prices Firm on Lower Base

ACTIVITY is more pronounced this week in western markets. A 1025-ton hospital was let in Seattle, a bridge let in Oregon takes 840 tons and five jobs in California involve 842 tons. Other markets report a preponderance of small jobs. Billet bar prices are more stabilized in Chicago. Inquiries show moderate improvement but lag behind the 1929 rate.

REINFORCING BAR PRICES, PAGE 71

Chicago, Feb. 11.—Reinforcing bar inquiry shows moderate improvement, but active projects are far below a year ago. Publication of base prices of 2.00c for billet reinforcing bars, with application of full extras, has tended to stabilize the billet market. Announcement is made by the Building Construction Employers' Association of Chicago that a survey of Chicago spring building programs indicates $61,300,000 in early contemplated projects, $28,475,000 in construction awarded to contractors, and about $66,000,000 in building now projected for the future. The long range view is that the year will compare favorably with recent years.

Boston, Feb. 11.—Demand for concrete bars has improved as to odd lot tonnages. About 200 tons was sold. Two or three large jobs are to be awarded within the next few days, including a bank building here.

New York, Feb. 11.—Buyers are slow to close on reinforcing concrete bar requirements. A fair tonnage remains up for figures. Prices are reported some firmer at 2.54c, cut mill stocks, New York. Orders under 50 tons ars fairly numerous. Mill stock shipments in carload lots have dropped to 2.44c, delivered New York.

Pittsburgh, Feb. 11.—Demand for concrete reinforcing bars holds at the January rate although little change is noted compared with the past several weeks. Pending work involves a fair tonnage although odd recent awards involve small lots. General contracts awarded on boulevard and bridge work for Allegheny county involve 915 tons of bars. The market continues 1.95c, Pittsburgh, for stock lengths and 2.20c for cut lengths.

CONTRACTS PLACED

1025 tons, King county hospital, Seattle, to Pacific Coast Steel Co.
996 tons, bridge over Salt river, Phoenix, Ariz., to unstated interest by Lynch-Cannon Co., Los Angeles, general contractor.
840 tons, Rogue river bridge, Gold Beach, Oreg., to unstated interest, through Mercer-Fraser Co., Eureka, Calif., general contractor.

Awards Compared

	Tons
Awards this week	5,513
Awards last week	4,114
Awards two weeks ago	3,050
Awards this week in 1929	5,150
Average weekly awards, 1929	5,849
Average weekly awards, 1930	3,798
Average weekly awards, Jan.	3,393
Total awards to date, 1929	47,530
Total awards to date, 1930	26,589

435 tons, library, West Virginia university, Morgantown, W. Va., to Wheeling Steel Corp.
400 tons, seaplane channel, Langley field, Virginia, to Truscon Steel Co.
273 tons, cannery, Richmond, Calif., to Soule Steel Co.
250 tons, paving in San Luis Obispo county, Sacramento, Calif., to unstated interest.
175 tons, tank foundations, Standard Oil Co. of Pennsylvania, to Taylor, Davis Inc.
150 tons, novitiate, Franciscan Fathers, Ellicot City, Md., to Concrete Steel Co., through North-Eastern Construction Co.
150 tons, city hall, Schenectady, N. Y., to McClintic-Marshall Co.
119 tons, paving in Kern county, Sacramento, Calif., to unstated interest.
100 tons, store building, Fred Sanders, Highland Park, Detroit, to Truscon Steel Co.
100 tons, Baptist church, Ponce de Leon avenue, Atlanta, Ga., to Southern Ferro Concrete Co.
100 tons, Spring Grove State hospital, Catonsville, Md., to Concrete Steel Co.
100 tons, children's sanatorium, Austin, Tex., to Capitol Steel & Iron Co.
100 tons, office building, 5451 Marathon street, Los Angeles, to unstated interest.
100 tons, office building, Central Illinois Public Service Co., Springfield, Ill., to Laclede Steel Co.
100 tons, hotel, Fourteenth and Jackson streets, Oakland, Calif., to unstated interest.
100 tons, building, United Autographic Register Co., Chicago, to Olney J. Dean Co.

CONTRACTS PENDING

8500 tons, Lincoln-Liberty building, Philadelphia.
700 tons, Henry avenue bridge, Philadelphia.
500 tons, (estimated) post office, Milwaukee.
225 tons, school, Fifth and Fitzwater streets, Philadelphia.
200 tons, apartment, 545 Barry avenue, Chicago.
200 tons, building, Northern Illinois Light & Power Co., Waukegan, Ill.
Unstated tonnage, addition to Morrison hotel, Chicago.

Rails, Cars

Over 14,000 Freight Cars Ordered and Nearly 6000 Active—Rails Dwindle—Engines Active

FEBRUARY is destined to be a banner freight car order month with 11,350 placed for the three Van Sweringen lines and 2150 bought by the Erie. Other pending inquiries involve 1000, 1800, 2000 and many smaller amounts. Rail purchases now are fragmentary. Accessory buying remains active, in excess of 10,000 tons being placed in Chicago territory.

RAILROAD TRACK PRICES, PAGE 72

New York, Feb. 11.—Prompt action is expected on Louisville & Nashville's 1800 freight cars and on Seaboard Air Line's 200 gondolas. If these and some other pending lists are covered this month, February car lettings will almost quadruple January's since so far almost 15,000 have been placed. Erie is expected soon to buy passenger equipment. Car orders involving 4966 in January compare with 9710 for December and with 13,196 for January, 1929. A full comparison follows:

	1930	1929	1928	1927	1926
Jan.	4,966	13,196	4,160	14,710	8,830
Feb.	.....	15,944	10,220	5,960	12,895
March	.....	12,023	2,958	4,955	8,895
April	.....	8,205	6,043	3,675	4,615
May	.....	7,562	2,531	5,425	4,448
June	.....	5,886	2,422	7,440	4,285
July	.....	341	582	2,295	1,265
Aug.	.....	2,854	677	1,181	152
Sept.	.....	4,517	1,378	682	3,335
Oct.	.....	19,506	2,853	886	2,840
Nov.	.....	6,361	6,140	1,189	3,925
Dec.	.....	9,710	4,799	14,897	8,990
Total	4,966	106,105	44,763	63,295	64,475

Pittsburgh, Feb. 11.—Part of the Chesapeake & Ohio and allied line car orders came to carbuilders in this district and mills here will benefit accordingly. Nickel Plate has taken no action on pending track fastenings. Miscellaneous orders for track material are in fair seasonal volume. Tonnage does not come up to a month ago. Light rails continue quiet.

Cleveland, Feb. 11.—Chesapeake & Ohio and allied railroads, Hocking Valley and Pere Marquette, divided orders for 11,350 freight cars among seven builders. The orders involve expenditures of $30,144,000. Chesapeake & Ohio bought 5000, Pere Marquette 4850 and Hocking Valley 1500. Erie ordered 2150. Wheels and axles for these cars involve between $1,000,000 and $2,000,000.

Chicago, Feb. 11.—Rail mills have reached near capacity operations and programs are expected to carry along the present rate of activity until late June. Railroads are urging shipments of both rails and track fastenings. A local electric line ordered 1000 tons of rails. Track fastenings sales amounted to 10,000 to 12,000 tons. Operations of track accessory departments are being speeded up, although capacity for spikes and track bolts is ample to care for all demands.

Between 4000 and 7000 of the 13,500 cars for Van Sweringen roads will be built in this district, calling for more than 50,000 tons of finished steel material. Pullman Car & Mfg. Corp. is operating practically full at its Michigan City works, and Standard Steel Car Co. shortly will go into full at its Hammond, Ind., plant. Specifications for steel for Rock Island cars are coming forward and material will be assembled early next month.

CAR ORDERS PLACED

Chesapeake & Ohio, 5000 cars: 1500 70-ton hoppers, to Standard Steel Car Co., Richmond, Va.; 1500 cars, to Standard Steel Car Co., Hammond, Ind.; 1500 flat bottom 50-ton gondolas, to American Car & Foundry Co., Huntington, W. Va.; and 500 box cars with end doors to Pressed Steel Car Co., McKees Rocks, Pa.

Chicago, Milwaukee, St. Paul & Pacific, 20 suburban and ten mail and express cars, to own shops.

Erie, 2150 freight cars, distributed as follows: 800 hopper, to Standard Steel Car Co.; 100 automobile, to Pressed Steel Car Co.; 100 furniture, to Pressed Steel Car Co.; 450 gondola, to Greenville Car Co.; 500 box and 200 automobile, to American Car & Foundry Co. Also four gasoline-electric cars and one diesel electric passenger coach, to unstated builder.

Hocking Valley, 1500 flat bottom 50-ton gondolas, to American Car & Foundry Co., Huntington, W. Va.

International Railway of Central America, 35 stock cars, to Gregg Car Co.

Monroe Coal Mining Co., 100 mine cars, to Irwin Foundry & Mine Car Co.

Pere Marquette, 4850 cars: 1500 auto cars to Pullman Car & Mfg. Corp., Michigan City, Ind.; 1500 box cars, to Standard Steel Car Co., Hammond, Ind.; 750 flat bottom 50-ton gondolas, to Ralston Steel Car Co., Columbus, O.; 500 auto and 250 furniture box cars, to Pressed Steel Car Co., McKees Rocks, Pa.; 100 flat cars, to Bethlehem Steel Co., Johnstown, Pa.; 250 flat bottom 70-ton gondolas, to Greenville Steel Car Co., Greenville, Pa.

LOCOMOTIVE ORDERS PLACED

New York Central, 15 locomotives for service on Boston and Albany; ten 2-8-4 type, to Lima Locomotive Works, and five 4-6-4, to American Locomotive Co.

CAR ORDERS PENDING

Aluminum Co. of America, 27 special hopper bottom steel cars.

American Refrigerator Transit Co., 1000 refrigerator cars, 40 tons capacity.

Chesapeake & Ohio and allied lines, 53 passenger coaches, 15 passenger-baggage, 5 passenger-baggage-mail, 12 express cars and 6 mail-express; bids opened Feb. 25.

Gulf, Mobile & Northern, two gasolene electric rail motor cars, three trailer cars and one observation.

Southern Pacific, seven electric motor coaches and two trailers in addition to 15 electric street cars previously announced.

LOCOMOTIVE ORDERS PENDING

Chicago, Milwaukee, St. Paul & Pacific, 15 heavy freight locomotives.

Georgia, Ashburn, Sylvester & Camilla, one 2-8-2 type locomotive.

Louisville & Nashville, six 4-8-2 type locomotives.

RAIL ORDERS PENDING

Alabama Great Southern, 2000 tons 85-pound rail and fastenings; bids Feb. 20.

Steel Corporation Shows Rise in Bookings

New York, Feb. 11.—Unfilled tonnage of the United States Steel Corp. has shown an increase for the fifth consecutive month. An increase of 51,517 tons during January, to 4,468,710 tons on Jan. 31, is noted in bookings yet unfilled. This latter figure is the largest since February, 1926, when the total reported was 4,612,822 tons. Following are monthly comparisons:

Date		Total	Change, tonnage	Change, per cent
Jan. 31,	1930	4,468,710	51,517+	1.2 +
Dec. 31,	1929	4,417,193	291,848+	7.74 +
Nov. 30,	1929	4,125,345	38,783+	0.95 +
Oct. 31,	1929	4,086,562	183,981+	4.71 +
Sept. 30,	1929	3,902,581	244,370+	6.68 +
Aug. 31,	1929	3,658,211	429,966—	10.5 —
July 31,	1929	4,088,177	168,733—	3.9 —
June 30,	1929	4,256,910	47,257—	1.10 —
May 31,	1929	4,304,167	123,596—	2.88 —
Apr. 30,	1929	4,427,763	17,045+	0.38 +
Mar. 31,	1929	4,410,718	266,377+	5.70 +
Feb. 28,	1929	4,144,341	34,854+	0.84 +
Jan. 31,	1929	4,109,487	132,775+	3.34 +
Dec. 31,	1928	3,976,712	303,712+	8.25 +
Nov. 30,	1928	3,673,000	78,030—	2.80 —
Oct. 31,	1928	3,751,030	52,662+	1.42 +
Sept. 30,	1928	3,698,368	74,325+	2.05 +
Aug. 31,	1928	3,629,042	53,116+	1.40 +
July 31,	1928	3,570,927	66,082—	1.81 +
June 30,	1928	3,637,009	220,187+	6.45 +
May 31,	1928	3,416,822	455,311—	11.70 —
Apr. 30,	1928	3,872,133	463,073—	10.70 —
Mar. 31,	1928	4,335,206	62,983—	1.43 —
Feb. 29,	1928	4,398,189	122,242+	2.80 +
Jan. 31,	1928	4,275,947	303,073+	7.62 +

Heppenstall Co. Will Hold Banquet Feb. 15

Pittsburgh, Feb. 11.—Heppenstall Co. will hold a sales meeting and banquet Feb. 15, commemorating the thirty-seventh anniversary of President C. W. Heppenstall's connection with the company, and marking the first anniversary of the installation of the electric induction process for the manufacture of fine steels. Electric induction made steel is made in cold furnaces governed by induction coils.

"New methods, more and better laboratory control are constantly improving steel," says Mr. Heppenstall, "and electric induction steel is more than a new method as it has completely revolutionized certain phases of steel manufacture."

The Heppenstall Co. is distributing many of its products, notably shear knives and die blocks, abroad. Sam Heppenstall, founder of the company, is now entering his ninetieth year. More than 100 Heppenstall men are expected to attend the banquet.

Strip

Larger Specifications Cause Mild Backlogs—Automotive Users Not Active—Prices Firmer

LACKING usual support from automotive and parts makers, few of whom are taking tonnages, cold-rolled stripmakers need increased specifications. Chicago mills are able to build up some backlog in this material. Hot-rolled strip is becoming increasingly active as automotive users add small requirements to the steady tonnages of other users. Prices in most districts are firmer.

STRIP PRICES, PAGE 72

Pittsburgh, Feb. 11.—Specifications for strip steel continue to improve moderately. Incoming tonnage for most producers exceeds the corresponding January period, although automotive business still is confined to a few companies. Operations are being increased with the current rate 55 to 65 per cent for hot mills and 50 to 55 per cent for cold. Prices generally are steady at 1.80c and 1.90c for the two sizes of hot strip, and cold strip at 2.65c.

Worcester, Mass., Feb. 11.—Cold rolled strip is showing more strength although the movement is not general. Prices are stationary at 2.80c to 2.90c. There is some sentiment, however, that they will return to their former mark of 2.90c to 3.00c if the expected spring betterment materializes.

Cleveland, Feb. 11.—Sale of cold strip in Cleveland and vicinity is limited. Only a few automotive consumers are active. Producers claim to be holding to 2.65c, Cleveland. Hot strip is more active. Stamping plants and other consumers identified with the automotive industry furnish attractive specifications. Efforts for price concessions are less and 1.80c, Pittsburgh, is named on wide and 1.90c on narrow.

Chicago, Feb. 11.—Cold-rolled strip mills are accumulating some backlogs through releases from several automobile builders. Operations show little gain at about 55 per cent. The cold-rolled strip price is 2.65c, Pittsburgh-Cleveland. Heavier backlogs are being obtained in hot-rolled strip with operations slightly above 60 per cent. Quotations of 2.00c for narrow hot strip, to 1.90c, Chicago, for wider strip, are named.

Youngstown, O., Feb. 11.—Incoming specifications for hot-rolled strip have advanced operating rates to 85 per cent, the highest this year. Much of this material is going to auto parts makers and much to makers of welded tubing. Cold-rolled requirements are larger but not nearly so heavy as for hot-rolled. Hot-rolled ranges from 1.80c to 1.90c, Pittsburgh, depending upon width, and cold-rolled is 2.65c to 2.75c for 3-ton lots.

W. P. Snyder Jr. Head of New Mining Company

Pittsburgh, Feb. 11.—The Snyder Mining Co. which was formed recently by the Shenango Furnace Co. and Crucible Steel Co. of America to take over the ownership and operation of the Shenango company's iron ore mines on the Mesabi range, has elected the following officers: President, W. P. Snyder Jr.; vice president, F. B. Hufnagel; vice president, George L. Collord; secretary, H. M. Wilson; treasurer, F. A. Demms. E. J. Maney, general manager of the Shenango ore properties, will continue in that capacity.

Directors of the company are: W. P. Snyder Jr., H. S. Wilkinson, G. L. Collord, F. B. Hufnagel, E. J. Maney and R. M. Keeney. General offices of the company will be at 812 Oliver building, Pittsburgh, and the mining office in the Alworth building, Duluth.

Mining of iron ore at Cornwall Ore Hills, Lebanon County, Pa., started in 1740.

Cold Finished Steel

Volume of Orders Lower than a Month Ago—Prices Firm

COLD FINISHED PRICES, PAGE 72

Pittsburgh, Feb. 11.—Incoming business in cold-finished steel bars and shafting fails to equal the activity of a month ago although specifications are holding fairly well to the rate of recent weeks. Most consumers are cautious regarding forward buying but at the same time producers are not interested in taking tonnage far ahead at current prices which are claimed to be out of line with the price of hot-rolled bars. Requirements of the automotive industry still are well below the volume of a year ago but shipments to farm implement builders are at a good seasonal level. The market is steady at 2.10c, Pittsburgh.

Detroit,—Feb. 11.—Cold finished bar shipments into this district in February promise to show a slight improvement over January, with specifications for March shipment broadening. The market is generally quoted at 2.10c, Cleveland, but is not firm at this price.

Cleveland, Feb. 11.—Cold-finished bars are moving better. Users have specified more attractive tonnages this month than last. Some pressure for lower prices is encountered but 2.10c, Cleveland, appears to rule.

Wire

Better Activity Is Shown—Manufacturers Are Best Buyers—South Taking Increased Tonnage

MANUFACTURERS lead in requirements for wire and are buying at a satisfactory rate. Weather conditions hold back activity in the West but the South is buying at the usual spring rate. Shading on wire nails continues to be heard and cut nails have been reduced. Production remains steady at the rate of the past few weeks. Price competition is intensified.

WIRE PRICES, PAGE 72

Chicago, Feb. 11.—Western wire mills report several heavier releases for manufacturers' wire. Specifications are holding to the January rate, but are slightly under a year ago. Weather conditions still interfere with distribution of merchant wire products in many sections of the West and Northwest, but in the South both jobber and dealer orders are more active. Western wire mill operations continue at about 55 per cent. Competition is becoming sharper in prices, but quotations are on the basis of 2.45c, Chicago or western mills, for bright wire, and $2.35 to $2.45 for wire nails.

Pittsburgh, Feb. 11.—Incoming tonnage in wire products is fairly steady although it fails to equal the activity of early January. Demand still is largely for manufacturers' wire, with nails, barbed wire and fencing slow. Occasional shading of $2.30 to $2.40 on standard wire nails has been encountered but producers have made no official recognition of lower figures. Bright plain wire is steady at 2.40c. Cut nails have been reduced to 2.55c, mill, for carload lots.

Worcester, Mass., Feb. 11.—Wire production is holding at about 60 per cent, with a wide diversity of products maintaining a steady balance. Plain bright wire to dealers remains at 2.55c to 2.65c, base, Worcester.

Cleveland, Feb. 11.—Manufacturers' wire is more active. Nut, bolt, rivet and screw producers specify larger amounts, indicative of their expanding operations. Fabricators of wire for the automotive trade are doing better. Nails still are slow, although a few jobber orders, some for mixed carloads, come in every few days.

Nonferrous Metals

Export Sales of Copper Increase—Demand For Both Zinc and Tin Lag While Prices Ease Off—Other Quotations Steady

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin—New York Spot	Straits Tin—New York Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Feb. 5	18.00	18.10	17.12½	38.75	39.40	6.25	6.10	5.25	23.90	8.75	35.00
Feb. 6	18.00	18.10	17.12½	39.12½	39.87½	6.25	6.10	5.22½	23.90	8.75	35.00
Feb. 7	18.00	18.10	17.12½	39.00	39.62½	6.25	6.10	5.25	23.90	8.75	35.00
Feb. 10	18.00	18.10	17.12½	38.87½	39.37½	6.25	6.10	5.22½	23.90	8.75	35.00
Feb. 11	18.00	18.10	17.12½	38.75	39.15	6.25	6.10	5.22½	23.90	8.75	35.00

NEW YORK, Feb. 11.—Export buying of copper has been the largest in a long time but the volume of business in other departments of the nonferrous metal market has shown little change. Purchases of zinc and tin were almost absent in the past week.

Sentiment is mildly optimistic. A further improvement in purchases and shipments is expected over the next few months. A huge volume of construction work now is in prospect, and most lines of manufacturing appear to have at least a fair outlook for later months. The building and the electrical industries appear to be especially promising for copper and lead. Cheaper money rates lend further hope of future business.

Brass and copper rolling mills are operating at much higher rates now than at the beginning of the year or the latter part of last year. The improvement has been outstanding in wire and cable, which seems to be around 80 per cent of 1929 average.

Prices of metals have been remarkably steady in the past week, with zinc showing slight easiness and tin showing only minor fluctuations.

Copper—Domestic business has been modrately active. Nearly all sales have been for prompt shipment. This fact gives the impression, together with fair business done by the brass and wire mills, that buying will continue at least moderately active. The pickup in foreign business also has been mostly for early shipment. Reports indicate production has been curtailed close to the rate of current consumption, but January statistics will not reveal this completely due to progressive curtailment.

Zinc—January statistics proved to be weaker than had been expected. Stocks went up more than 10,000 tons to a total of 87,933 tons, the heaviest since 1921. Sales in January were the largest since last March, and orders for shipment within the month were the largest in a much longer period. However, production totaled 51,133 tons. Whereas prime western had been firm at 5.25c, East St. Louis, it eased to a spread quotation.

Tin—Business has been light with the result that prices have eased a little although January statistics were not as weak as had been expected. Amount of tin scheduled to arrive in this country this month is unusually light. The principal source of price easiness appears to be the lack of buying by consumers. Curtailment, of which there has been much talk, gives no concrete evidence of development.

Lead—Consumption of lead is maintained relatively high and prices are firm. Little buying still is being done for February while most is for March.

Aluminum—Business picked up considerably in January. It appears as if further improvement may be made this month. The general manufacturing lines have brought more than the automobile industry. Prices are firm. —*Daily Metal Trade.*

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	23.25
Copper, hot rolled	27.75
Lead, full sheets (cut ½c more)	10.00
Zinc sheet (100-pound base)	$10.50
Zinc strip (100-pound base)	$9.50
Aluminum, flat sheets, up to 10 gage, 8 to 72 inches wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	28.25
Copper	29.25
RODS	
Yellow brass (high, full turnings)	21.25
Naval brass	24.00
WIRE	
Copper	19.87½
Yellow brass (high)	23.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	11.25 to 11.75
Chicago	11.00 to 11.25
Cleveland	11.50 to 12.00
St. Louis	10.00 to 10.25
HEAVY YELLOW BRASS	
Cleveland	7.50 to 8.00
HEAVY COPPER AND WIRE	
New York	14.25 to 14.50
Boston	13.75 to 14.25
Chicago	13.50 to 13.75
Cleveland	14.00 to 14.50
St. Louis	10.00 to 10.50
RED BRASS BORINGS	
New York	10.25 to 01.75
YELLOW BRASS TUBING	
Cleveland	7.50 to 8.00
LIGHT COPPER	
New York	12.25 to 12.50
Chicago	11.75 to 12.25
Cleveland	12.00 to 12.50
St. Louis	10.00 to 10.50
LIGHT BRASS	
Boston	6.50 to 6.75
Chicago	6.25 to 6.75
Cleveland	6.00 to 6.50
St. Louis	5.50 to 6.00
ZINC	
New York	2.75 to 3.00
Cleveland	2.25 to 2.50
St. Louis	2.75
ALUMINUM	
Clippings, soft, Cleveland	14.50 to 15.00
Clippings, hard, Cleveland	11.50 to 12.00
Borings, Cleveland	8.00 to 8.50
Cast, Cleveland	11.00 to 11.50
Cast, Boston	10.50 to 11.00
Cast, St. Louis	10.50 to 11.00

Secondary Metals

Remelt aluminum No. 12	16.25 to 16.75
Brass ingot, 85-5-5-5	15.50 to 15.75

Coke By-Products

Spot Business Expands—Shipments of Naphthalene Are Heavier

New York, Feb. 11.—Light oil distillates continue to move steadily against contracts. Prices are firm and some increase is noted in spot business. Inquiry is broader. Toluol and xylol are active, with the lacquer trade taking more material. Current supplies of phenol are kept down by steady demand. While buying is not as brisk as some weeks ago, no large supplies have accumulated, although offerings are fairly large. The bulk of phenol is moving at 17.00c; some outside material is reported under that figure in this market. Naphthalene, both flakes and balls, is moving in larger volume. Holders of some contracts are not expected to place shipping orders for two weeks. Prices are unchanged.

Coke By-Products

Per Gallon at Producers' Plant in Tank Lots

	Spot
Pure bezonl	$0.22
90 per cent benzol	0.22
Toluol	0.35
Solvent naphtha	0.28
Commercial xylol	0.28
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.17 to 0.18
Per Pound at Producers' Plants	
Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.10 to $2.20

Quicksilver Is Steadier

New York, Feb. 11.—Quicksilver continues quiet, with little change to be noted, although prices have become more steady. The market is at $123.50 to $124 a flask.

Warehouse

Spotty Demand Noted in Most Districts—Distribution Good—Cold-Finished Extras Spreading—Galvanized Sheets Lower

DISTRIBUTION is good among various jobbing districts. Orders call for practically everything handled. Tonnage shows moderate betterment in St. Louis and Detroit, but is disappointing in Chicago. Sheet prices are being adjusted downward as are cold-finished bars.

New York—Warehouse volume is seasonally heavy, small orders being numerous. Structurals and bars move steadily. Demand for sheets holds well. Prices generally are steadier.

Buffalo—Business is somewhat spotty. February sales continue to gain over those of early January and sellers look for an improved situation this and next month.

Pittsburgh—Demand holds at the recently improved rate. January's upturn was less than in mill tonnage. Prices still show irregularity. Sheet quotations are fairly steady with galvanized slightly easier.

Detroit—Demand while spotty, shows moderate improvement. Further gains are expected in March. Prices generally hold except for shading in galvanized sheets. Quantity differentials, offering reductions to consumers for consolidating orders, find increased favor.

Chicago—Buying is disappointing. January volume was 10 to 12 per cent under last year. Orders, however, are well distributed for all products. Sheet prices for the St. Paul and Minneapolis markets are, No. 24 black, 3.79c; No. 24 galvanized, 4.58c; No. 10 blue annealed 3.54½c, base, the latter unchanged. St. Louis district sheet quotations are, No. 24 galvanized, 4.85c; No. 24 black, 4.25c; and No. 10 blue annealed 3.45c.

Cincinnati—Business is continuing at a seasonally normal rate with individual orders small.

St. Louis—Orders show moderate betterment. More favorable weather has been a stimulant. General manufacturing is slow to resume its stride and building is backward.

Cleveland—Order volume is steady, but tonnage is not equal to the rate of a year ago. Larger demand is expected by jobbers when mill deliveries become deferred. Prices are firm and jobbers state there has been no change in customary methods of quoting warehouse products.

Philadelphia—Jobbers report somewhat improved bookings. New cutting extras and quantity differentials on cold-finished steel bars have been adopted and base prices have been reduced $2.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Houston	3.00c
Los Angeles	3.30c
New York†††‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
New York††	3.25c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.95c
Chattanooga	3.25c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Houston	3.00c
Los Angeles cl.	2.40c
Los Angeles lcl.	2.70c
New York	2.65c to 3.10c
Philadelphia	2.65c to 3.00c
Pittsburgh	2.75c
San Francisco cl.	2.30c
San Francisco lcl.	2.60c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Houston	3.25c
Los Angeles	3.30c
New York†††‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼ in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	2.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.60c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Houston	3.90c
Los Angeles	4.00c
New York ‡‡	3.50c to 3.90c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.25c to 3.35c
San Francisco	3.90c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.54½c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore *†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c
Detroit	3.95c
Los Angeles	4.90c
New York	3.65c to 3.90c
Philadelphia*†	3.80c
Pittsburgh**	3.65c to 3.75c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.79c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago (local delivery)	4.60c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***	4.50c
Detroit	4.60c
Houston	5.40c
Los Angeles	5.30c
Pittsburgh**	4.30c
Philadelphia*†	4.45c
Pittsburgh**	4.40c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	4.85c
St. Paul	4.58c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	4.00c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chattanooga	3.45c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit 3/16-in. and lighter	3.30c
Houston	3.65c
Los Angeles	4.15c
New York‡‡	3.75c
Philadelphia*	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York‡‡	4.25c
Philadelphia*	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons	Flats, squares
Baltimore (c)	3.50c	(a) 4.00c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chattanooga*	3.85c	4.35c(d)
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.50c	4.00c
Philadelphia*	3.40c	3.90c
Pittsburgh	3.70c	4.20c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	4.75c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.64c	5.14c

(a) Rounds only; (d) Squares only.

COLD ROLLED STRIP

Boston, 0.100-inch 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.15c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	13.00c
Iron bars, round	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **Less than 25 sheets. *†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Pacific Coast

Buying on Larger Scale Though Below Average—Prospects Are Good

MIDWINTER influences and inimical weather continue to be felt on the coast but demand for steel is improving and recent sales have been at an improved rate, with much prospective business appearing. A number of projects are ready for bids within a few days. At Seattle pipe and railroad car business have improved the plate market. Prices in general are unchanged.

San Francisco, Feb. 8.—(*By Air Mail*)—Considerable interest is being displayed in the sixth annual iron and steel conference at Del Monte, Feb. 13-15. It is expected delegates this year will far exceed former years. It is reported that many of the large eastern steel interests will send delegates this year. Continuation of improvement in demand for iron and steel products on the Coast is noted, with greater firmness in prices.

Pig Iron and Coke

Demand for foundry coke and pig iron is quiet and from present indications little real buying is looked for during the coming month. No large industries or sales were reported. Prices are unchanged.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Awards of concrete bars this week aggregated 1331 tons, compared with the weekly average last year of 1609 tons. This brings bookings to date to 6066 tons as compared with 8466 tons for the corresponding period in 1929. Included among the larger lots placed were 250 tons and 119 tons, respectively, for highway work in San Luis Obispo and Kern counties, California, placed with unknown interests. The Soule Steel Co. secured 273 tons for a cannery in Richmond, Calif. In addition numerous small tonnages were placed.

Activity in the plate market this week was confined entirely to lots of less than 100 tons. Bookings so far this year total 6401 tons, compared with 33,641 tons for the same period a year ago. Pending business includes only small tonnages. While 2.25c, c.i.f., is the general quotation, this has been shaded several dollars a ton on desirable business.

Demand for structural shapes is increasing and awards this week aggregate 3579 tons, the second largest weekly total of the year. This compares with 3623 tons, the weekly average last year. Bookings to date are 14,357 tons, compared with 13,796 tons for the corresponding period in 1929. Stevens Bros. secured the general contract for the Yellowstone river bridge near Gardiner, Mont., and the American Bridge Co. took 450 tons for a bridge for the Santa Fe railroad over the San Joaquin river at Stockton, Calif. McClintic-Marshall Co. secured 150 tons and 165 tons, respectively, for an apartment and a ferry slip in San Francisco. Pending business includes 270 tons for a library in Berkeley, bids on which have been opened, and 170 tons for an office building in Salinas, Calif. Plain structural shapes continue firm at 2.35c, c.i.f.

Other Finished Material

A good volume of cast iron pipe business was placed during the week and aggregated 2847 tons, compared with the weekly average last year of 1580 tons. This brings the total to date to 15,041 tons, compared with 13,189 tons for the same period last year. Los Angeles placed 317 tons and 318 tons of 6-inch class 150 pipe with the National and the Pacific States Cast Iron Pipe Co., respectively. The Downey county water works district, Downey, Calif., awarded 1694 tons to Lee R. Weber and the United States Pipe & Foundry Co. took 383 tons for the Santa Fe irrigation district at Oceanside, Calif. Pending definitely before bidders. Hoquiam plans an industrial water pipe line, 32 inches in diameter, subject to a $100,000 bond election March 1. Aberdeen, Wash., also proposes five miles of pipe, steel or wood. The largest award of the week, 1000 tons, was divided between the Pacific Coast Steel Co. and United States Steel Products Co. This material was purchased by the Pacific Car & Foundry Co., which has the contract to build 200 standard freight cars for the Chicago, Milwaukee, St. Paul & Pacific railroad. The work will be done at the company's Renton shops here. This contract also involves 1000 tons of shapes which will be furnished by the Pacific Coast Steel Co. and United States Steel Products Co.

Fabricating plants have considerable work on hand but no large projects have developed recently. Awards this week included 400 tons to an unstated interest for the Canadian National railroad pier at Vancouver, B. C. The Northern Pacific railroad is building a viaduct at Butte, Mont., said to involve 200 tons, which is being furnished by an unstated eastern producer.

Pipe Inquiry Is Strong

Inquiry for pipe is exceptionally strong and several important projects are pending. Municipal improvements are planned by a number of cities in the Northwest. Port Townsend, Wash., will open bids Feb. 11, for 4106 feet of 12-inch cast iron pipe in addition to galvanized iron and lead pipe and accessories. Salem, Oreg., is in the market for a quantity of 18 and 24-inch cast iron pipe. Anacortes, Wash., plans a water system to cost $300,000.

Seattle Trade Growing

Seattle, Feb. 6.—The Pacific Northwest market has not fully recovered from the holiday season and unfavorable weather. Awards of iron and steel this week approximated 5000 tons, with a number of important projects still pending.

Bars, Plates and Shapes

Mill prices remain unchanged, merchant bars and shapes at 2.35c, reinforcing materials at 2.30c and plates 2.25c.

Local steel mills have a fair run of business, much of it in car lots. Operations are unchanged. The largest award of the week, 1025 tons for the King county hospital, was booked by the Pacific Coast Steel Co. The same plant will also furnish 250 tons for the Gainsborough apartments, Seattle. Contracts for furnishing 840 tons for the Rogue river bridge, Gold Beach, Oreg., has gone to an unstated interest. Mercer & Fraser have the general contract.

Several important plate jobs are to be up for figures soon but are not yet

Hanna Moving Pig Iron Department to Detroit

Cleveland, Feb. 11.—Pig iron headquarters of the Hanna Furnace Co., subsidiary of the M. A. Hanna Co., will be moved to Detroit, April 1, it was reliably reported here today. Officials of the company were in Detroit arranging for the removal. The entire pig iron department, including a personnel of about ten, with officials, will be transferred. C. A. Collins is president of the furnace company; W. G. Sharp, vice president, and R. E. McMahon, manager of the pig iron sales department. The company now has a district sales office in Detroit and one in Buffalo.

Since lease to the company's Cherry Valley stack at Leetonia, O., was taken over by the Davison Coke & Iron Co., it has not been an important factor in the Ohio pig iron market, while it has concentrated its efforts at Detroit, where it has two stacks, and at Buffalo, where is has seven. Certain subsidiaries of the Hanna company, the Weirton Steel Co., Wierton, W. Va., and the Great Lakes Steel Corp., Detroit, recently were merged in the National Steel Corp., whose steel mills at Detroit will draw iron from the Hanna stacks. Other departments of the Hanna company, such as ore, vessel and coal, will remain at Cleveland.

Iron Ore

Foreign Ore Easier—Late Opening for Lake Market

IRON ORE PRICES, PAGE 72

New York, Feb. 11.—Prices on foreign iron ore show a slightly easier tone. Foreign manganiferous ore ranging from 45 to 55 per cent iron and 10 to 12 per cent manganese now is 11.00c to 11.50c per unit, alongside docks at Atlantic ports, a reduction of 1 cent a unit. Large lots have been picked up at considerably less. Swedish basic ore running 65 per cent is 9.50c to 10.50c per unit. Lower can be done than the present asking prices.

An easier tone also is noted in prices on manganese ore. Brazilian ore, 46 to 48 per cent, has been sold at 28.00c per unit c.i.f. tidewater, and slightly less is reported done in one case. Indian ore, 48 to 50 per cent, is 29.00c to 31.00c. The market on Caucasian ore, 52 to 55 per cent, continues nominal at 30.00c to 32.00c.

Cleveland, Feb. 11.—Lake Superior iron ore sellers expect a late opening of the market, with a gradual pick up in demand toward the middle of the year. Nothing is being said regarding prices. The Lake Erie dock balance Feb. 1 was 543,186 tons more than a year ago, as shown by the following report from the Lake Superior Iron Ore association:

	Receipts	Shipments	Dock balance Feb. 1, 1930
Buffalo	5,411,640	410,489	25,891
Erie	1,410,016	1,360,574	121,810
Conneaut	9,570,557	9,164,539	1,794,579
Ashtabula	8,872,566	8,330,204	1,905,266
Fairport	2,415,771	2,247,665	378,578
Cleveland	11,148,363	7,679,026	1,098,895
Lorain	3,847,799	1,976,358	119,901
Huron	1,183,879	1,171,300	364,959
Toledo	1,911,981	1,217,701	43,985
Total	45,772,572	33,557,856	5,853,864
Comparative total 1 year previous	36,956,342	27,279,670	5,310,678

Pig Iron

(*Concluded from Page* 73)

rates aggregated 12,000 tons, including 2500 tons for a manufacturer of heating apparatus. Buying is well diversified. Jobbing foundries, especially those working on automotive castings, report expansion in new business. A leading Alabama furnace interest is contemplating an advance of $1 per ton in this district. The local maker is firm at its quoted price. Furnaces have accumulated fair backlogs.

Birmingham, Ala., Feb. 11.—Improvement is again reported in the pig iron market, a few orders for considerable tonnage being booked. Shipments in this district are increasing steadily and the movement to outside territory is gaining. Surplus stock is being reduced. Prices are firmer.

Toronto, Ont., Feb. 11.—Slow but steady improvement is noted in demand for foundry and malleable pig iron. Some inquiry is coming out for forward delivery, but first quarter buying is materially completed. Spot orders are more numerous and call for larger tonnages. Prices are unchanged.

Philadelphia, Feb. 11.—Eastern Pennsylvania producers continue $20, base, furnace, for foundry iron despite offerings from outside at lower equivalent prices. Birmingham foundry iron was sold here in good volume in the past week at $13 to $14, base, Birmingham, equivalent to $18.25 to $19.25, delivered Philadelphia docks. Delaware river pipe manufacturers by utilizing rail and water combination can have Birmingham iron delivered to their docks for $4.85. Even the all-rail rate of $6.37 enables consumers in this district to buy at less than $19.50, base, delivered. Iron from other sources also may be had at less than $19.50, delivered in this district. Southern pipe iron now is available at Delaware river consuming points in barge loads at less than $18, base, delivered.

A Virginia pipemaker has purchased 15,000 tons of Virginia foundry iron. The market on Virginia foundry iron continues $17.75, base, furnace.

Newton's Monroe Plant Starts Monday

Youngstown, O., Feb. 11.—The Newton Steel Co. plans to start its new sheet mills at Monroe, Mich., next Monday at 8 a. m. The skilled workmen have been transferred from its Newton Falls, O., works for several weeks, and the company has been stocking its sheet bar banks with material from a Cleveland mill. It plans later to receive its sheet bars from Cleveland by water. The operating schedule of the Monroe mill provides for starting the new units right off on making autobody sheets.

Westinghouse To Expand

Cleveland, Feb. 11.—Westinghouse Electric & Mfg. Co. announces an expansion program for its plant here. The manufacture of lighting equipment, heretofore concentrated at South Bend, Ind., will be moved here.

Start on Youngstown's Continuous Mill; Deposit Republic Merger Stock

CLEVELAND, Feb. 11.—Decision of the Youngstown Sheet & Tube Co. to proceed with the construction of a continuous sheet mill at its Brier Hill works has no immediate bearing upon the relationships of independent steel producers generally regarded as components of a merger.

In December, as related in the Dec. 19 issue of IRON TRADE REVIEW, the Youngstown company was licensed by the American Rolling Mill Co., Middletown, O., to add a continuous mill. Plans have since been in formulation, some equipment contracts let, and steel for the new mill building is to be erected shortly.

The new mill will improve the Youngstown company's competitive situation in the sheet market. A similar mill is under consideration by the Otis Steel Co., Cleveland, which also has been licensed by the American company.

Energies of the leading Eaton investment trust—Continental Shares Inc.—are now being concentrated on consummating the financial details of the merger involving the Republic Iron & Steel Co., Central Alloy Steel Corp., Donner Steel Co. and Bourne-Fuller Co. Stock of these companies, to be merged as the Republic Steel Corp., is now being deposited, with Feb. 17 set as the closing date.

Continental Shares is a stockholder of many other independent steel companies and for practical purposes may be said to be studying their positions both from the standpoint of an investment and their desirability for affiliation with the companies in which Continental Shares has a large interest.

While discussions are known to be under way between the Youngstown company and the Inland Steel Co., largest independent steel producer in the Chicago district, the situation at this time is little changed from any time in the past six months. It is believed that a union of these two producers is logical whether or not these merged companies eventually are grouped with Republic or any other independents.

The Youngstown company now claims an annual pig iron capacity of 3,480,000 gross tons and a steel ingot capacity of 3,000,000 tons. The Inland company annually can produce 950,000 tons of pig iron and 1,800,000 tons of ingots. Consolidation of the two would net an annual steel capacity of 4,800,000 tons, compared with 24,541,000 for the United States Steel Corp., 8,190,000 for the Bethlehem Steel Co., 4,900,000 for the new Republic grouping and 3,270,000 for the Jones & Laughlin Steel Corp.

The present outlook is that neither the Bethlehem nor the Jones & Laughlin companies will figure in any independent steel mergers west of the Buffalo-Pittsburgh line. Among others, Continental Shares is a shareholder of the Wheeling Steel Corp. and Gulf States Steel Co.

Timken, Sharon and Ludlum Form Unit To Sell Special Alloy Steels

FORMATION of a new steel company, Associated Alloy Steel Co. Inc. was announced Feb. 11 jointly by M. T. Lothrop, president, the Timken Roller Bearing Co.; Severn P. Ker, president, the Sharon Steel Hoop Co. and H. G. Batcheller, vice president, Ludlum Steel Co.

The company has been incorporated to sell exclusively corrosion, heat, and wear-resisting alloy steels produced by the Timken, Sharon and Ludlum companies. These products include nirosta, nitralloy and stainless steels. Nirosta is a high-chrome, high-nickel alloy resistant to the corrosive action of air, salt water and acids at high temperatures and high pressures which may be welded, drawn, spun and highly polished. Nitralloy is a special alloy steel which, it is claimed, obtains the hardest known wearing surface when treated by an ammonia process. Both of these alloys were developed by Fried. Krupp A. G. Essen, Germany.

The board of directors includes: H. G. Batcheller, vice president, Ludlum company; J. Reid Evans, secretary and treasurer, Sharon company; Severn P. Ker, president, Sharon company; M. T. Lothrop, president, Timken company; J. F. Strough, secretary and treasurer, Timken company; and Neil F. Towner, attorney, Albany, N. Y.

The active management will be under the direction of David B. Carson, vice president and treasurer, formerly sales manager, development division, Central Alloy Steel Corp. Headquarters of the company will be located in the Union Trust building, Cleveland, and branch offices and warehouses established in strategic centers throughout the country. Mill facilities are being expanded and additional equipment for the most recent production practices is already installed.

Mr. Batcheller, president of the new company, made the following statement:

"We feel that Associated Alloy Steel Co. meets a very definite need in the alloy steel situation, providing at once the co-ordinated production of these materials in all forms under the finest supervision and metallurgical research and a centralized source of supply from which customers may obtain the varied forms necessary to meet their requirements. It provides greater efficiency in engineering and servicing and the economy in marketing necessary to supply materials at the lowest possible price."

Speed Gulf States Plans for Expansion

Birmingham, Ala., Feb. 11.—W. H. Coverdale, president, Gulf States Steel Co., is to spend three or four days in Birmingham district this week inspecting properties of the company. The old blooming mill of Gulf States at Gadsden is being dismantled and by March 15 the new mill will have been installed. Bids have been called on the new sheet mill, to cost about $2,000,000, and within 15 days actual work will be under way. The open-hearth furnaces are being improved and capacity increased from 75 tons to 90 tons. New plate mill will be in operation by May 1.

George W. Burpee, of the engineering firm of Coverdale & Colpitts, has prepared a budget for further development of Gulf States, to be authorized to be carried out this year, to cost $3,500,000. Reports continue that Continental Shares Inc., which recently formed the Republic Steel Corp., is buying into the Gulf States company.

Pails and Tubs Gain

Washington, Feb. 11.—December production of pails and tubs rose from the preceding month and were at the same level as December, 1928, according to department of commerce reports. Totals for the year, however, were higher in 1928 than in 1929. Following are monthly figures:

(In dozens)

	PAILS, TUBS		OTHER WARE	
1928	Production	Shipments	Production	Shipments
Dec.	112,923	102,802	36,042	23,567
Total	1,795,625	1,763,401	515,428	481,421
1929				
Jan.	151,106	165,745	40,649	36,896
Feb.	151,019	170,813	60,471	43,329
March	211,252	211,516	50,055	49,549
April	165,155	171,722	55,778	55,632
May	176,622	150,501	43,370	38,597
June	98,857	104,762	37,479	35,334
July	105,454	109,841	42,384	44,117
Aug.	107,004	108,461	53,250	54,860
Sept.	113,698	120,297	46,594	52,970
Oct	129,282	135,197	45,117	49,511
Nov.	102,400	90,684	32,951	30,123
Dec.	112,962	107,733	33,114	25,441
Total year	1,624,811	1,647,272	541,212	516,359

Pattern Code Effective

Washington, Feb. 11.—Enough written acceptances have been received concerning the recommended commercial standard for foundry patterns of wood, sent out last Oct. 29, to make the standard effective at once, states the division trade standards, department of commerce.

Youngstown's Earnings Doubled in 1929

The Youngstown Sheet & Tube Co., Youngstown, O., earned $21,564,174 in 1929 after depreciation, depletion, interest and federal taxes, compared with $10,446,336 in 1928. This was an increase of 106 per cent. Earnings for 1929 were equivalent to $19.53 a share on 1,061,667 shares, the average number outstanding during the year, compared with $9.53 a share on the 1,000,000 no-par common shares outstanding in 1928. Earnings were the highest for any peace-time year in the company's history.

Earnings for the fourth quarter were $4,270,606, compared with $6,756,741 in the preceding quarter and with $3,573,695 in the corresponding period of 1928. Earnings for the fourth quarter, although the lowest for any three-month period in 1929, were about 20 per cent greater than in the fourth quarter of 1928.

Net profit for 1929 from operations before depreciation but after allowance for federal taxes, was $30,802,683. Dividends from investments totaled $1,122,750. Interest earned and other income amounted to $2,098,671. On Sept. 9, 1929, a 20 per cent common stock dividend was distributed to common stockholders, which increased the 000,000 to 1,200,000.

Directors declared the regular quarterly dividends of $1.37½ a share on the preferred stock and $1.25 a share on the common, both payable April common shares outstanding from 1,000,000 to 2,000,000.

Wheeling Mold & Foundry Drops Merger Plan

Wheeling, W. Va., Feb. 11.—Negotiations for the consolidation of the Wheeling Mold & Foundry Co. with a number of other large iron and steel foundry companies have been suspended, following the expiration of options on majority of common stock held by Cochran, Scott & Co., Chicago banking firm. Failure to exercise the options was attributed to generally unsatisfactory financial conditions.

The bureau of internal revenue has announced refund to the Central Steel Co., Massillon, O., covering overpayment of income and profits taxes for 1918 amounting to $388,070.23 and for 1919 amounting to $46,186.19.

J. A. Farrell Calls Foreign Trade Convention

New York, Feb. 11.—"The outstanding feature of American foreign trade is the increase by more than 12 per cent last year in the sales of the products of our manufacture," declared James A. Farrell, chairman, National Foreign Trade council, is issuing a call for the seventeenth National foreign trade convention, in Los Angeles, May 21-23. About 2,000 foreign traders are expected to attend. "It is noteworthy," added Mr. Farrell, "that our exports of finished manufactures have recuperated promptly from the recent temporary uncertainty in American industry. Finished manufactured exports for December showed a slight increase over those for the preceding December, and for the entire year more than equaled the whole of our exports in 1913."

Tyson Bearing Co. Gets Massillon Plant

Massillon, O., Feb. 11.—Tyson Roller Bearing Co., recently organized to make a new type of hollow roller bearing, has acquired the plant and equipment formerly owned by the Byers Machine Co. at Oberlin road and Sixth street. The Tyson company will locate temporary offices, which are now in the Ohio Merchants Trust building, at the new plant location, and as well will move the temporary plant at Reliance, O., here. Frank Tyson, 1211 Louisiana avenue, Canton, O., is president of the new company.

Locomotives Lower

Washington, Feb. 11. — January shipments of railroad locomotives from principal manufacturing plants, according to department of commerce figures, show a decline from December, 1929, although higher than January of the same year. Total of unfilled orders is a gain over December. Following are monthly comparisons:

	Domestic Shipments			Domestic Unfilled Orders		
1929	Total	Steam	Elec.	Total	Steam	Elec.
January	23	6	6	278	251	21
February	23	20	1	339	301	20
March	35	31	4	488	419	24
April	61	57	2	495	419	24
May	99	92	2	444	362	22
June	78	58	1	552	489	21
July	69	39	3	539	490	18
August	129	117	6	436	392	13
September	75	60	7	429	347	55
October	96	90	6	423	347	49
November	95	75	....	398	340	49
December	67	62	1	490	435	48
Total	850	707	39	104	.....	.....
1930						
January	48	48	.....	585	527	48

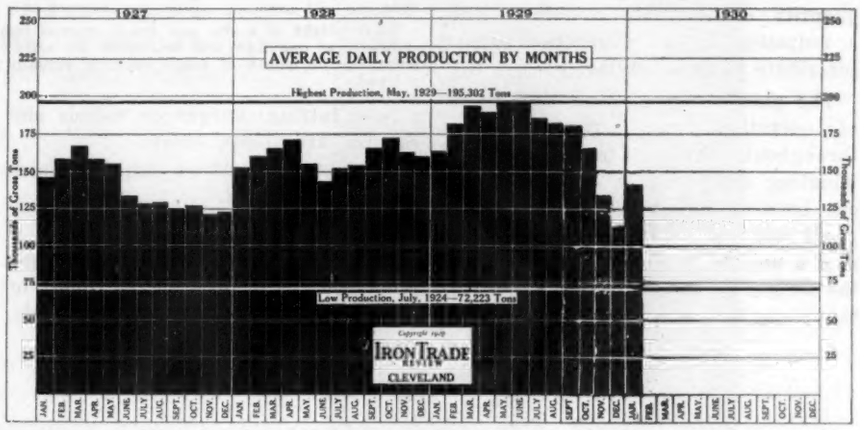
Samuel Waldo erected on the Pawtuxet River in Rhode Island a furnace and foundry which afterwards was known as Hope furnace.

Columbia Sells Interest in Pipe Plant

Prior to the taking over by the United States Steel Corp. of the properties of the Columbia Steel Corp., San Francisco, the latter interest sold its stock in the Pacific States Cast Iron Pipe Co., Provo, Utah, to J. R. McWane, connected with the McWane Cast Iron Pipe Co.

Hill Diesel Engine Co., Lansing, Mich., has increased capital from $125,000 to $1,000,000.

January Steel Ingot Daily Rate in 21 Per Cent Gain Over December



PRODUCTION of open-hearth and bessemer steel ingots in January rebounded to a daily rate of 140,234 gross tons, exceeding both the December rate of 115,851 tons and the November rate of 135,116 tons ,according to the American Iron and Steel institute, New York.

Compared with January, 1929, when the daily rate was 166,309 tons, last month's rate revealed a substantial decline. In fact, it was the poorest January since 1924, but the increase over December—21 per cent—is heartening and indicates further improvement in February.

January's total of open-hearth and bessemer ingots was 3,786,319 gross tons, compared with 2,896,269 tons in December and 4,490,354 tons last January.

Operations during January were down, the percentage being 71.51 of capacity, contrasted with 84.8 per cent last January and an average of 88.81 per cent for all 1929.

Steel Ingot Production—1929-1930

94.51 Per Cent of Industry Reporting

Gross Tons

1929	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	Number of working days	Approximate daily output all companies	Per cent of operation
Jan.	3,694,218	549,616	4,243,834	4,490,354	27	166,309	84.80
Feb.	3,599,224	489,279	4,088,503	4,326,000	24	180,250	91.91
March	4,183,869	596,691	4,780,560	5,058,258	26	194,548	99.20
April	4,026,576	640,351	4,666,927	4,938,025	26	189,924	96.84
May	4,276,186	707,484	4,983,670	5,273,167	27	195,302	99.59
June	3,990,798	622,585	4,613,383	4,881,370	25	195,255	99.56
July	3,922,532	649,950	4,572,482	4,838,093	26	186,080	94.88
Aug.	3,988,729	668,023	4,656,752	4,927,258	27	182,491	93.05
Sept.	3,627,639	635,593	4,263,232	4,510,879	25	180,435	92.01
Oct.	3,619,432	644,528	4,263,960	4,511,650	27	167,098	85.21
Nov.	2,797,488	522,672	3,320,160	3,513,025	26	135,116	68.90
Dec.	2,376,775	360,489	2,737,264	2,896,269	25	115,851	59.07
Total	44,103,466	7,087,261	51,190,727	54,164,348	311	174,162	88.81
1930							
Jan.	3,136,878	441,572	3,578,450	3,786,319	27	140,234	71.51

Figures exclude crucible and electric ingots. Operation percentages for 1928 are based on an annual open-hearth and bessemer steel ingot capacity of 58,627,910 tons as of Dec. 31, 1927; 1929 percentages based on capacity of 60,990,810 tons as of Dec. 31, 1928.

New Cold-Finished Bases, Extras Save Warehouse Buyers $2 to $4

NEW warehouse base prices on cold-finished steel bars, together with uniform quantity differentials and cutting extras, have been made effective at New York, Philadelphia, Boston and Buffalo. The new bases are: $3.40, $3.40, $3.50 and $3.15, respectively, per 100 pounds. In general, the new bases and differentials result in savings of $2 to $4 a ton to customers. Readjustments in the quantity differentials combined with a reduction in the warehouse spread contribute to these savings.

The plan to bring about uniformity of quotations and cutting charges throughout various territories, eliminating discrepancies hitherto existent between adjacent sales areas, is predicated upon a mill base price, plus a uniform warehouse spread, plus the freight to distributing points other than the four recognized basing points, i.e., Chicago, Buffalo, Cleveland and Pittsburgh.

The new quantity differentials follow:

QUANTITY DIFFERENTIALS

Specifications less than 4000 pounds of a size and grade to be shipped at one time are to carry the following extras:

	Per 100 lbs.
Less than 100 lbs	$2.00
100 to 299 lbs	1.50
300 to 499 lbs	1.00
500 to 1999 lbs	0.40
2000 to 3999 lbs	0.20
4000 lbs. and over	0.00

Total weight of a size and grade ordered for shipment at one time will determine the extra, regardless of length or exact quantity actually shipped.

New cutting charges on rounds and squares are shown below.

New cutting extras on flats also have been adopted.

James Logan wrote that there were four furnaces in blast in the colony of Pennsylvania in 1728. Colebrookdale, built in 1720, and Durham, built in 1727, were two of these.

SAW CUTTING CHARGES

ON PER CUT BASIS

For lengths 12 inches and longer or a single cut, same size and length

Rounds Diameter	Minimum Charge	Per Cut	Squares and Hexagons Diameter	Minimum Charge	Per Cut
3/16" and under	.35	.02	3/16" and under	.35	.03
1/4" to 11/16" incl.	.35	.04	1/4" to 1/2" incl.	.35	.04
3/4" to 1" incl.	.35	.07	9/16" to 11/16" incl.	.35	.05
1 1/16" to 1 1/4" incl.	.35	.10	3/4" to 1" incl.	.35	.08
1 5/16" to 1 5/8" incl.	.35	.12	1 1/16" to 1 1/8" incl.	.35	.12
1 3/4"	.42	.16	1 3/16" to 1 1/4" incl.	.35	.15
1 7/8"	.42	.16	1 5/16" to 1 1/2" incl.	.35	.18
2"	.42	.20	1 9/16" to 1 3/4" incl.	.50	.20
2 1/16"	.55	.20	1 7/8" to 2" incl.	.50	.22
2 1/8"	.55	.26	2 1/16" to 2 1/4" incl.	.60	.30
2 3/16"	.55	.26	2 5/16" to 2 1/2" incl.	.80	.35
2 1/4"	.55	.35	2 9/16" to 2 3/4" incl.	.95	.40
2 5/16"	.70	.35	2 13/16" to 3" incl.	.95	.50
2 3/8" to 3" incl.	.70	.40	3 1/16"	1.10	.60
3 1/16"	.80	.40	3 1/8"	1.10	.60
3 1/8"	.80	.46	3 3/16"	1.20	.90
3 3/16"	.85	.46	4"	1.25	1.00
4"	.85	.60	4 1/16"	1.35	1.10
4 1/16"	1.00	.60	5"	1.50	1.25
5"	1.10	.75		....	....
5 1/16"	1.30	1.00		....	....
6"	1.30	1.20		....	....
6 1/16"	1.45	1.20		....	....
7"	1.55	1.45		....	....
7 1/16"	1.65	1.60		....	....
8"	1.80	1.75		....	....

For lengths shorter than 12 inches, same size and length

Diameter	2 to 4 Per Cut		5 to 24 Per Cut		25 or More Per Cut	
	Rounds	Sqs.-Hex.	Rounds	Sqs.-Hex.	Rounds	Sqs.-Hex.
3/16" and under	$.20	$.23	$.12	$.15	$.02	$.03
1/4" to 11/16" incl.	.21	.24	.13	.16	.04	.05
3/4" to 1" incl.	.23	.25	.15	.17	.06	.07
1 1/16" to 1 1/4" incl.	.25	.28	.17	.19	.08	.09
1 5/16" to 1 5/8" incl.	.26	.30	.19	.21	.09	.12
1 3/4"	.28	.31	.20	.24	.12	.13
1 7/8"	.29	.33	.21	.26	.14	.15
2"	.31	.34	.23	.27	.15	.16
2 1/16"	.33	.35	.24	.28	.16	.17
2 1/8"	.34	.36	.25	.29	.16	.17
2 3/16"	.38	.44	.27	.30	.17	.18
2 1/4"	.43	.50	.28	.31	.18	.20
2 5/16"	.45	.55	.29	.32	.19	.21
2 3/8"	.50	.60	.31	.33	.20	.22
3"	.50	.65	.32	.35	.21	.23
3 1/16"	.54	.70	.32	.36	.22	.24
3 1/8"	.58	.75	.33	.37	.23	.25
3 3/16"	.65	.90	.35	.39	.24	.28
4"	.75	1.00	.36	.40	.25	.30
4 1/16"	.80	1.10	.40	.45	.30	.33
5"	.95	1.25	.45	.50	.32	.35
5 1/16"	1.10	....	.55	....	.40	....
6"	1.20	....	.65	....	.50	....
6 1/16"	1.20	....	.90	....	.70	....
7"	1.45	....	1.10	....	.85	....
7 1/16"	1.60	....	1.20	....	.95	....
8"	1.75	....	1.30	....	1.05	....

Rise In Enameled Ware

Washington, Feb. 11.—December shipments of enameled ware, according to department of commerce figures, rose sharply over November and were the highest of any month since April. Compared with December, 1928, they also showed a gain. Totals for 1929 show an appreciable gain over 1928. Figures by months follow:

	In Dozens			
1928	Total	White	Gray	Colored
Dec.	324,445	132,422	136,170	55,853
Total, 1928	4,191,761	1,900,275	1,552,034	739,452
1929				
Jan.	427,871	199,589	138,480	89,802
Feb.	390,577	178,589	131,206	80,782
March	449,425	183,191	166,368	99,866
April	463,577	194,971	137,764	130,842
May	352,885	156,195	109,165	87,525
June	337,375	147,285	89,919	100,171
July	290,532	127,058	90,454	73,020
Sept.	338,169	143,505	101,127	93,537
Oct.	371,292	158,138	112,391	100,763
Nov.	305,714	115,117	100,144	90,453
Dec.	391,523	103,404	107,643	180,476
Total, year	4,504,102	1,861,011	1,403,419	1,239,672

Electric Orders High

Washington, Feb. 11.—Electrical goods' orders for the fourth quarter declined from the record of the third quarter, according to department of commerce figures, but set a high mark for that period over the past seven years. The year's total for 1929 set a record also. Figures follow by quarters for the past three years:

Quarter	1927	1928	1929
1st	$235,883,303	$237,508,001	*$322,424,619
2nd	229,353,332	245,520,801	*340,863,112
3rd	228,610,346	264,466,257	*338,169,678
4th	232,877,670	282,226,449	288,736,209
Total	926,724,651	1,029,721,508	1,290,193,618

*Revised.

Form Ingot Metal Code

Washington, Feb. 11.—More than 30 members of the Nonferrous Ingot Metal institute attended a trade practice conference here last week under the auspices of the federal trade commission at the United States chamber of commerce at which 27 resolutions were adopted as rules to govern the trade.

Members of the institute had met the day before and ironed out any differences as to the wording of the resolutions and the resolutions were adopted unanimously. About 80 per cent of the country's brass and bronze tonnage was represented.

Godefroi de Bochs of Liege, Belgium, built the first iron foundry to be established in England, at Dartford, a market town in Kent, in 1580.

Industrial Men in the Day's News

Carmi A. Thompson, President, Stacey Engineering Co., Columbus, O.

TRAINING in the legal profession over a long period of years equips him well for the chief executive's chair in merger of four large companies.

DESPITE numerous handicaps he obtained his higher education at Ohio State university, largely through his own determination and stick-to-it-iveness.

LAW, politics, iron ore, steamships, banking and now gas holders, blowers, etc., all are included among the fields of his energetic labors.

LEGAL talent is finding increased acceptance in industry's executive positions and has a wider scope in the conduct of industrial affairs. The new president of the Stacey Engineering Co., Columbus, O., holding company for the recently-merged P. H. & F. M. Roots Co., Connersville, Ind.; Stacey Bros. Gas Construction Co., Cincinnati; Connersville Blower Co., Connersville, Ind.; and Wilbraham-Green Blower Co., Pottstown, Pa., is Carmi Alderman Thompson, of the law firm of Thompson & Smith, Terminal Tower building, Cleveland. His election was noted in Iron Trade Review recently and comes as a high point in a long and eventful as well as successful political and legal career.

From a 10-year-old trapper boy in an Ohio coal mine to be head of a $2,500,000 company represents Mr. Thompson's 49-year journey. He was born in a West Virginia mining camp Sept. 4, 1870. His parents removed to Ohio when he was but three years old. His father was a miner, who finally settled in Ironton, O., where at the age of 10 young Carmi following in father's footsteps, worked in the mines after school and during vacations. In slack times he worked in the brickyards. Funds were low and he could not attend high school. He obtained employment in the engineering department of the Cincinnati, Hamilton & Dayton railroad, and after various promotions finally became level man at $65 monthly. With a higher education before him as a goal, he saved money assiduously. These savings, augmented by earnings in odd jobs after school hours, took him as far as his junior year in Ohio State university at Columbus, O., but he had to give up the struggle. After working for about a year he returned to the university and was graduated in 1892. He taught school at Bement, Ill., for two years, and studied law at night. He returned to Ohio State to complete a law course. He was admitted to the bar one year later and started to practice law in Ironton, O., in June, 1895, continuing until Jan. 1, 1907.

During that interval he made his entry into public office. When he was 27 the Ironton city solicitor resigned and the city council asked Mr. Thompson to take the appointment. He did and was re-elected three times without opposition between 1896 and 1905. In the latter year he was elected state representative to the Ohio general assembly from Lawrence county. Again he had no opposition for the two terms he remained in office. He was elected speaker of the house in 1906 and was a member of the judiciary committee of the first term. He served as secretary of the state of Ohio, 1907 to 1911, and as assistant secretary of the interior at Washington, March, 1911, to July, 1912, under President Taft for whom he acted as secretary until November, 1912. When Lee McClung resigned as treasurer of the United States, Mr. Thompson was named to that office and served from November, 1912, until June, 1913, or until after Woodrow Wilson became president. When he took over the job he gave Mr. McClung a receipt for $1,519,285,908.57, which receipt now is framed and hanging on Mr. Thompson's office wall.

His Stacey Engineering Co. connection is by no means his first entry into industry. In June, 1913, James J. Hill recognized his ability as an executive and organizer

and chose Mr. Thompson to be general manager and chief counsel of the Great Northern iron ore properties, St. Paul, a position he held until November, 1917. The government had ruled that the corporation had to lease out all its properties and to this great task Mr. Thompson devoted much time and energy. He then was made vice president and general counsel of the Tod-Stambaugh Co., Cleveland, which post he still fills.

He also is president of the Becker Steamship Co., Cleveland, and vice president of the Iron City Savings bank, Ironton, O. He served as commissioner to the Philippine islands in 1926 and was a captain in company I, Seventh Ohio Volunteers, in the Spanish-American war, returning as a major and later becoming colonel of the seventh regiment, Ohio National guard. He was commander-in-chief of the United Spanish War Veterans, 1925-26. In 1921 he was named to the advisory committee of the disarmament conference and was chairman of the subcommittee for new methods and new weapons of warfare, and this committee, of which General Pershing, Admiral Rogers and Assistant Secretary of the Navy Roosevelt were members, drafted clauses prohibiting the use of gas in war time.

He is a member of the Union and Lake Shore Country clubs, Cleveland; Minnesota club, St. Paul, and Kitchi Gammi club, Duluth. He also is a thirty-second degree Mason at Cleveland and a member of the Alpha Tau Omega fraternity, Columbus, O.

Men of the Industry

JAMES C. BARNABY has been appointed consulting engineer of the Buffalo works, Worthington Pump & Machinery Corp., Harrison, N. J. He has been in the New York office as engineer since 1922.

T. Cruthers, New York district sales manager since 1927, has been appointed assistant general sales manager with headquarters at Harrison.

J. E. Buckingham, with the company's railroad department since 1923, first as district manager at St. Louis and since June 1, 1929, as acting manager at Harrison, has been appointed manager of the railroad department, Harrison works, and W. B. Savary, in the railroad department for more than six years, has been appointed assistant to Mr. Buckingham.

Harry T. Smith, assistant traffic manager at New York since 1915, has been appointed traffic manager there.

C. K. Hood has been named district sales manager at New York to succeed Mr. Cruthers.

G. C. Emmons was appointed manager of the Kansas City office to succeed F. I. Kemp, now manager of the San Francisco office of the Worthington Machinery Corp. of California, a new subsidiary.

Paul E. Wilson, acting manager since April 1, 1929, of the Salt Lake City, Utah, office, has been appointed district manager there.

Walker O. Nettleton, handling advertising production, writing and layout for the company since February, 1929, has been appointed assistant to the manager of the advertising and publicity department.

* * *

E. D. Johnston, whose retirement as president of P. H. & F. M. Roots Co., Connersville, Ind., when that company was merged with other blower manufacturers into the Stacey Engineering Co., was noted in IRON TRADE REVIEW of Feb. 6, has been identified with the Roots company for the past 45 years. He retires from active business, having had its general management since the death of F. M. Roots in 1889 and having been its president since 1898. He continues as one of the directors of the Stacey Engineering Co.

WILLARD S. HARING

Who, as noted in IRON TRADE REVIEW of Jan. 16, was appointed vice president in charge of western sales for the Alan Wood Steel Co., Conshohocken, Pa.

Mr. Johnston located in Connersville in 1885 and has been prominently identified with numerous industrial, civic and charitable projects. He has seen the Roots company, now 71 years old, grow steadily from a small machine shop and foundry housed in a small frame building, serviced by a hand jib crane of 10-foot radius and a power plant comprising an overshot water wheel developing about 10 horsepower to the leading industry of its kind in the country with its products shipped all over the world.

Mr. Johnston designed the first high pressure blower and gas exhauster of the positive displacement type, which since has become one of the principal products of the company, and 35 years ago he designed a special planer to finish the contour surfaces of blower impellers, which planer uses three cutting tools simultaneously.

During his business career Mr. Johnston was president of the Connersville Hydraulic Co. and later of the Hydro Electric Light & Power Co. He is a member of the Connersville Rotary club, of which he was the first president. Among other philanthropic endeavors, he established the Fayette County Children's home, now the Frazee Home for Children.

* * *

Harold Ambler has been elected vice president of Frank D. Chase Inc., 720 North Michigan avenue, Chicago, engineer and architect.

* * *

Gordon Huth was on Feb. 10 appointed safety director for the Universal Atlas Cement Co., Chicago, a subsidiary of the United States Steel Corp. He has been connected with the company for about 15 years, the last 11 of which he served as safety inspector at Duluth.

* * *

S. B. Taylor, who has been with the Reliance Electric & Engineering Co., Cleveland, since 1925, has been promoted to be assistant works manager. He started as design engineer of alternating current motors and in 1928

was advanced to be engineer in charge of drafting. He is a graduate in electrical engineering from Purdue university.

* * *

J. C. Orr has been appointed sales engineer, Endicott Forging & Mfg. Co. Inc., Endicott, N. Y. He is a graduate of Purdue university.

* * *

R. G. Richmond has resigned as general manager of the Waterbury Co., New York and Waterbury, Conn., manufacturer of cordage, and until recently wire rope.

* * *

F. J. Schlatter, who retired Jan. 1 as comptroller of the Continental Steel Corp., Kokomo, Ind., has been made comptroller of the United Electric Coal Co., Danville, Ill.

* * *

W. J. Zink, has been appointed representative in Alabama and vicinity for the Reading Chain & Block Corp., Reading, Pa. He will operate from Homewood Station, Ala.

* * *

Donald S. Johnson, St. Louis, formerly sales representative of the Commonwealth Steel Co., Granite City, Ill., and St. Louis, has become connected with Folds, Buck & Co.'s St. Louis office.

* * *

Herman A. Speh, M. G. Schneider, A. M. Coddington, James G. Brownlow and Harry A. Yetter have been made members of the directorate of the Hotchkiss Steel Products Co. Inc., Binghamton, N. Y.

* * *

Guy L. Bayley, formerly head of the Chicago office, Sanderson & Porter, 52 William street, New York, consulting engineers, and Harrison Smith, for many years staff engineer for the company, have been admitted to the firm.

* * *

J. G. Benedict, general manager, and C. N. Kirkpatrick, general sales manager of Landis Machine Co. Waynesboro, Pa., sailed for Europe Jan. 31. They will make a study of industrial conditions in England and on the Continent.

* * *

Henry Harnischfeger, president, Harnischfeger Corp., Milwaukee, manufacturer of electric cranes, has given $50,000 to construct and equip a public school at Salmuenster, Germany, his birthplace. Mr. Harnischfeger will visit Salmuenster this summer.

* * *

Fred O. Reemer, for several years director of the southern interests of the Pullman Car & Mfg. Corp. at Birmingham, Ala., has been elected vice president of the Pullman company in charge of southern operations.

* * *

E. I. Dail, Dail Steel Products Co., Lansing, Mich., was recently made a vice president of the Capitol Savings & Loan Co., Lansing.

* * *

E. S. Houdlette, vice president in charge of sales for the Pacific Coast Steel Co., San Francisco, has retired after 30 years' activity with the company. Mr. Houdlette was born in Richmond, Me., in 1880 but arrived in California a year later. He became connected with the Pacific Coast Steel Co. in 1910, when it took over

E. S. HOUDLETTE

the right to manufacture corrugated bars from the Corrugated Bar Co., with which company Mr. Houdlette had been identified for several years. One year later he was elected secretary and shortly after that became manager of sales. Later he was elected a vice president. He also was vice president in charge of sales for the Southern California Iron & Steel Co., Los Angeles, which company was acquired in 1925 by the Pacific Coast Steel Co. Mr. Houdlette is a member of the San Francisco Commercial, Claremont and Mt. Diablo Country clubs.

* * *

Carl R. Walmsley was elected president, Leader Iron Works Inc., Decatur, Ill., at the annual meeting of directors recently, to succeed T. E. O'Brien, who resigned Jan. 1 after 13 years in that office to devote more time to management of the Leader Boiler & Heating Co. Mr. Walmsley formerly was general manager. Other officers were re-elected.

* * *

W. J. Wallis has been elected chairman of the board of the reorganized Youngstown Foundry & Machine Co., Youngstown, O.; B. G. Parker was elected president and general manager; S. K. Hine, vice president and Lloyd R. Wallis, secretary-treasurer, Roy L. Hartzell has been added to the board of directors to succeed the late A. E. Adams. In addition to Messrs. Wallis, Parker, Hine and Hartzell, F. A. Williams, Frank Purnell and Isaac Wilkoff were added to the board of directors.

* * *

Capt. Roger Williams has resigned as operating manager of the International Mercantile Marine Co., to become vice president of the Newport News Shipbuilding & Dry Dock Co., Newport News, Va. He succeeds F. P. Palen, resigned Dec. 22.

* * *

Arthur L. Tushbant, associated in the steel business of the Detroit territory for the past 15 years, has been placed in charge of the bar and structural shape department recently established by the Federal Steel Corp., Detroit, warehouse operator.

* * *

Percey A. McKittrick, assistant treasurer, Parks-Cramer Co., has been elected president of the Fitchburg, Mass., chamber of commerce. For more than 20 years Mr. McKittrick was connected with the Saco-Lowell machine shops, Lowell, Mass., part of the period as purchasing agent.

* * *

George W. Way has been named district sales manager at Dallas, Tex., for the Republic Iron & Steel Co., Youngstown, O. He formerly was district representative at Dallas of the Union Drawn Steel Co., and succeeds William Anderson who has been Republic's representative there. The company's offices at Dallas are being removed to 1411 Republic Bank building.

J. R. McCrea has joined the Republic company's sales force at Dallas. He formerly was with the International Supply Co. at Denver and with the Producers & Refiners Corp. at Casper, Wyo.

* * *

George B. Doane, of the Perry Buxton Doane Co., Boston, and Harry Cohen, of H. Cohen & Co., Chelsea, Mass., were re-elected president and chairman of the executive committee, respectively, at the second annual meeting of the Boston chapter, Institute of Scrap Iron and Steel Inc., held Jan. 30. Other officers elected include: J. Lipsitz, of J. Lipsitz Co.,

Chelsea, first vice president; F. Zecohini, Cutterson & Gould, Lawrence, Mass., second vice president; R. Grossman, L. Grossman Sons Inc., Quincy, Mass., treasurer; and William G. Mitchell, Perry Buxton Doane Co., Boston, secretary.

* * *

A. F. Rader, vice president, Belmont Iron Works, Philadelphia, has sailed on a cruise to South America.

* * *

Joseph Davis has been appointed executive vice president of the American Locomotive Co. F. Pierce Brent was named controller.

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C. F. Gallmeyer, formerly with the Kendallville Foundry Co., Kendallville, Ind., has resigned to become foundry superintendent of Layne & Bowler Inc., Memphis, Tenn.

* * *

M. L. Spackman has resigned as secretary and foundry manager of the Henry Furnace & Foundry Co., Cleveland. He had been connected with that firm 20 years.

* * *

O. D. Strong, with headquarters at Tulsa, Okla., has been appointed Oklahoma-Kansas district manager for the Reading Steel Castings Co., Reading, Pa.

* * *

Carl F. Mayer, for the past 10 years manager of the oven department, Swartwout Co., Cleveland recently acquired by the Foundry Equipment Co., Cleveland, has been elected second vice president of the latter company.

* * *

Ernest Lancashire, of the American Steel Foundries, Chicago, at the Granite City, Ill., plant, has been transferred to the wheel department at the Alliance, O., works. Mr. Lancashire is a former member of the faculty of the University of Illinois.

* * *

L. E. McKim, formerly of Toledo, O., has been appointed Cleveland manager of the National Freight Co., national subsidiary of the Pennsylvania railroad, for forwarding and handling of freight, in which work he has had considerable experience.

* * *

Arthur P. Paull, George F. Evans and Eugene F. McCarthy, all active in the employ of Beals, McCarthy & Rogers, Buffalo, warehouse operators, were elected to the board of directors at the recent annual stockholders' meeting. All officers were re-elected.

* * *

A. R. McCreary, formerly vice president and general manager of the Crowell, Lundoff, Little Co., Cleveland, now the Crowell & Little Construction Co., and latterly identified in executive capacities with the Foundation Co., and Hoggson Bros., both of New York, has been appointed manager of the industrial engineering and building construction department recently inaugurated by Arthur G. McKee & Co., Cleveland.

* * *

F. F. Elliot, formerly works manager, Cleveland plant, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been appointed director of foundries of the company with headquarters at East Pittsburgh. He was made works manager of the Cleveland plant in 1924.

J. H. Johnson, formerly general foreman at Cleveland, has been placed in charge of the foundry there.

* * *

Albert C. Bruce, formerly chairman of the board of directors, U. S. Hoffman Machinery Corp., Chicago, has been elected president to succeed Herbert W. Stone, resigned. George E. Bowdoin was elected vice president Wayne Mendell, general sales manager, was elected vice president in charge of sales.

* * *

George H. Clymer has been appointed district sales manager, at 732 Commercial Trust building, Philadelphia, for the Wrought Iron Co. of America, Lebanon, Pa. He succeeds the late Albert P. Loesch and for the past two years has been covering Eastern Pennsylvania outside of Philadelphia, the upper part of New Jersey, and Maryland.

* * *

John T. Wilkin, president and chief engineer of the Connersville Blower Co. Inc., Connersville, Ind., was made general manager at a recent meeting of the board of directors.

Bernard C. O'Brien, formerly in charge of sales in the Pittsburgh district, was elected secretary; W. E. Newkirk, purchasing agent, became treasurer, and E. C. Hassler, assistant superintendent, was appointed acting superintendent.

* * *

Elmer T. McCleary, president of the Republic Iron & Steel Co., Youngstown, O., has been elected director and chairman of the board of the Union Drawn Steel Co., Beaver Falls, Pa., now under control of the Republic company. H. T. Gilbert, vice president, and W. B. Ohl, auditor of the Republic company, were chosen directors of the Union Drawn company. Eugene S. Hoopes was re-elected president and general manager.

* * *

Charles Butterworth, for several years connected with the Chrysler Corp., Newcastle, Ind., as efficiency engineer in the forge division, sailed Feb. 6 for Moscow, Russia, where he will be associated with the state institute for rationalization of production and with the state institute for designing new metal plants in Leningrad. His new work calls for the setting up, installation and equipping of three large forge plants, heat treating and cold trimming departments.

* * *

S. Livingston Mather, vice president of the Cleveland-Cliffs Iron Co., Cleveland, Feb. 5 was chosen a director of the Youngstown Sheet & Tube Co., Youngstown, O., to succeed the late A. E. Adams.

James A. Campbell, chairman of the board of the Youngstown company, was elected a member of the executive committee, succeeding Mr. Adams. Other members of this committee are T. J. Bray, former president of the Republic Iron & Steel Co.; H. G. Dalton, partner, Pickands, Mather & Co., Cleveland, and Richard Garlick, Youngstown.

* * *

W. S. Orr and Vance A. Cronk, engineers identified with the Freyn Engineering Co., Chicago, who returned to the United States about a month ago, have returned to Leningrad, Russia, in connection with work the company is doing for the Soviet government.

William T. Martersteck, also of the Freyn Engineering Co.'s engineering force, sailed Feb. 8 to join the group of engineers in Leningrad at work on the contract between the company and the Union of Socialist Soviet Republics for technical assistance in the latter's iron and steel industry.

* * *

Morris Speer, of the Rotter-Speer Co., Cleveland, was re-elected president of the Cleveland-Detroit chapter of the Institute of Scrap Iron and Steel Inc., at the annual dinner-meeting at the Statler hotel in Detroit Jan. 28. Harry Alvin, of the Grant Iron & Metal Co., Detroit, was elected chairman of the executive committee. Other officers include E. A. Schwarzenberg, of the E. A. Schwarzenberg Co., Cleveland, first vice president; A. Kasle, of Detroit, second vice president; Myron Cohen, of the M. Cohen & Son Co., Cleveland, treasurer; and Harry Goldman of the Riverside Scrap Iron & Metal Co., Detroit, secretary.

* * *

Robert Woodward has resigned from the board of directors and as chairman of Edgar Allen & Co. Ltd., Im-

(*Concluded on Page* 99)

European Tube Cartel Is Renewed

German Makers Adjust Difficulties, Syndicate Continues for Ten Years—British Works Book Rolling Stock for South America—Markets Quiet

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, Feb. 11. (*By Cable*)—Renewal of the international tube syndicate for ten years is the chief feature of interest in the iron and steel markets this week. Recent discussions among members of this European organization tended to slow up tube business. Plan by the Krupp works to install tube mills in retaliation for refusal by some makers to absorb a portion of its steel output was mentioned recently as one of the factors bearing on the future of the syndicate.

Depression prevails in the British iron and steel markets. Some of the steelworks in the Middlesbrough district are idle and pig iron output there exceeds demand. Exports of pig iron from Middlesbrough in January dropped to 8976 tons from 9385 tons in December. The November exports were 14,128 tons and October, 16,877 tons. The market for East coast hematite has become weak. Birmingham merchants report restricted demand for continental steel, although some billets and sheet bars from the Continent are being sold in South Wales. Orders for galvanized sheets have improved, especially from South America and the West Indies. The market for tin plate is steady.

Builders of rolling stock have booked orders from South America. The London & Northeastern railroad has placed 65 heavy freight locomotives and will build 144 locomotives in its own shops in 1930.

The outlook in France is mainly good, though uncertain factors are noted. Building trades are active. Belgian markets are quiet. Better export demand is reported in Germany, resulting from more intensive effort.

British Steel Market Feeling Less Hopeful

BIRMINGHAM, Eng., Jan., 24.—The weekly market at Birmingham brought no new features as far as British materials were concerned but there was a fall of about 4s ($.96) in quotations for Belgian No. 3 iron bars. One merchant was quoting £5 ($24.35) f.o.b. Antwerp or about £6 2s 6d ($29.82) delivered in the Birmingham area. This iron is used by nut and bolt makers in this district and this drop in price aims another blow at the Staffordshire iron maker who sells common bar iron for nut and bolt making at about £9 ($43.83) a ton. This Belgian iron is not controlled by the cartel and apparently Belgian works are in need of orders. The various arrangements and selling agencies which have been set up however, appear to be having a stiffening effect upon semifinished steel. Billets were a little dearer yesterday and merchant bars were also firmer. There is no real buying movement in foreign products although there is always a certain tonnage coming into this district.

Sterling $4.87

Midland furnace men meet this week for their monthly review of the situation. A week or two ago it was anticipated that furnace men would press for an advance in prices, most of them being in a sound position. Within the last week or two, however, conditions have changed for the worse and it is now commonly accepted among buyers and sellers that an advance is not in the interest of the trade. Where premiums were being paid a week ago the seller will accept the

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, February 10	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON	£ s d		£ s d		£ s d		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$17.62	3 12 6*	$16.04	3 6 0	$16.04	3 6 0	$17.50	3 12 0
Basic-Bessemer	16.65	3 8 6†	15.07	3 2 0	15.07	3 2 0	16.77	3 9 0
Hematite, Phosphorus 0.02-0.05	18.96	3 18 0	24.70	630*	.....	.....	17.74	3 13 0
SEMIFINISHED STEEL								
Billets	$29.77	6 2 6	$22.36	4 12 0	$22.36	4 12 0	$22.36	4 12 0
Wire rods	41.31	8 10 0	30.38	6 5 0	30.38	6 5 0	30.38	6 5 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	$31.59	6 10 0	$31.59	6 10 0
Merchant bars	1.74c	8 0 0	1.16c	5 5 0	1.16c	5 5 0	1.16c	5 5 0
Structural shapes	1.68c	7 15 0	1.09c	4 19 3	1.09c	4 19 3	1.10c	4 19 9
Plates, ship, bridge and tank	1.79c	8 5 0	1.36c	6 4 0	1.36c	6 4 0	1.36c	6 4 0
Sheets, black, 24 gage	2.17c	10 0 0	2.31c	10 10 0	2.31c	10 10 0	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.55c	11 14 0	2.85c	12 18 9	2.85c	12 18 9	2.97c	13 10 0
Bands and strips	2.17c	10 0 0	1.24c	5 12 6	1.24c	5 12 6	1.23c	5 12 0
Plain wire, base	2.06c	9 10 0	1.43c	6 10 0	1.43c	6 10 0	1.54c	7 0 0
Galvanized wire, base	3.04c	14 0 0	1.82c	8 5 0	1.82c	8 5 0	1.87c	8 10 0
Wire nails, base	2.39c	11 0 0	1.49c	6 15 0	1.49c	6 15 0	1.54c	7 0 0
Tin plate, base box 108 pounds	$ 4.56	0 18 9	.....	.....	.....	.....	$ 9.23	1 18 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$17.62	3 12 6	$19.21	490(2)	$17.58	630	$20.31	85
Basic pig iron	16.65	3 8 6	20.58	525(1)	15.62	560	21.74	91
Furnace coke	4.37	0 18 0	6.59	168	6.28	225	5.14	21.50
Billets	29.77	6 2 6	24.30	620	24.83	890	28.91	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.51c	140
Merchant bars	1.74c	8 0 0	1.26c	700	1.18c	910	1.53c	141
Shapes	1.84c	8 10 0	1.26c	700	1.20c	925	1.50c	138
Plates, ship, bridge and tank	1.95c	9 0 0	1.42c	790	1.46c	1,125	1.71c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.65c	1,470	2.73c	2,100	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.60c	12 0 0	3.55c	1,970	3.45c	2,650	3.78c	350
Plain wire	2.06c	9 10 0	1.94c	1,075	2.15c	1,650	2.43c	225
Bands and Strips	2.17c	10 0 0	1.39c	770	1.50c	1,150	1.77c	164

*Middlesbrough; †Basic-‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 17s 6d ($4.25) f. o. b. Ferromanganese £21 13s 0d ($105.22) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($72.90) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

zone price, and there are other indications that users of foundry iron are holding off the market. Some furnacemen say they have never experienced such reluctance to renew contracts, buyers being satisfied to order small parcels urgently needed. So far there has been no stocking of foundry iron by furnaces as specifications against contracts absorb the output. The fuel position governs coke prices to a large extent and easier conditions are the rule.

Other factors, however, influence the fuel situation. The winter has been mild and there has been no real pressure from domestic sources. But it is unlikely the same conditions will prevail in February and March. East coast hematite is difficult to sell on the Birmingham market and representatives of northern firms were inclined to shade the price for a good order.

In the Middlesbrough area there is a scarcity of new buying although furnaces are able to dispose of their output comfortably. The prices of raw material have eased but wages of blast furnace men and ironstone miners have been slightly increased under the sliding scale agreement and there is practically no advantage to pass on to the consumers. East coast hematite makers are hoping that values will appreciate sufficiently on the Continent for British iron to become competitive. Shipments are increasing and are better than the corresponding period of December. Hematite makers have relaxed prices to £3 18s 6d ($19.09) for mixed numbers and have abandoned the idea of forcing up values, of which there was so much talk a month ago. Some sellers, however, are still out for £4 ($19.48) for supplies over periods up to the end of March. Blast furnace coke in the Middlesbrough area can be bought down to £1 2s ($5.35) delivered at the furnace and the position in this respect is in the furnace men's favor.

Dorman Long & Co., Middlesbrough, announced yesterday that their Carlton Ironworks will be closed down in March. It is not stated what the duration of the stoppage will be. The production of ferromanganese which has been carried on at the works will be transferred to the South Bank Ironworks. More than 200 men will be affected.

In contrast to other districts Barrow in Furness hematite makers report increased activity and the quarter promises to be one of the busiest since 1921. A good volume of business has been passing during the week both on home and overseas account.

Among contracts for railway equipment recently placed the Metropolitan Cammell Carriage, Wagon & Finance Co., Birmingham, has been awarded 150 all-steel ventilated covered goods wagons each of 50 tons capacity for the Buenos Ayres & Pacific railway, 40 all-steel bogie hopper wagons for the Sao Paulo Brazilian railway, thirty 25-ton 4-wheeler hopper ballast wagons and four ballast plow wagons for the London & North Eastern railway and 40 steel bodies and under-frames for bogie corridor third class carriages for the London Midland & Scottish railway. The Western Australian Government railways have placed with the Sentinel Wagon Works, Shrewsbury, an order for a 100-horsepower, gear-driven Sentinel-Cammell steel rail car with seating accommodation for 52 passengers.

Middlesbrough steel works have a fair total of work on books but new orders are scarce. Structural engineers in Birmingham are specifying hardly anything in the way of plates as their present orders are easily covered by steel already in stock. Continental competition is keen, especially in the smaller sizes of steel, and imports into the Tees last week totaled 4900 tons of steel sheet bars. Midland rollers of small bars are badly wanting work and are more ready to shade the price in order to keep mills at work.

In South Staffordshire high quality finished iron is a steady trade but in crown iron orders are of a miscellaneous character, making it difficult to arrange a rolling program while it is expensive to have to change the rolls so many times. Merchants who deliver scrap into South Staffordshire say the works are well supplied and not prepared to pay more than £2 17s 6d ($13.98) delivered in the Black Country warehouses.

Galvanized sheet makers in the Midlands have further reduced prices to £11 15s ($57.21) and £11 17s 6d ($57.81) and these rates have proved a little more attractive to some foreign buyers, among which is South America.

British Trade Heavier; Imports and Exports Exceed 1928 Total

London, Jan. 30.—(*European Staff Service*)—Exports of pig iron and ferroalloys from Great Britain during 1929, were 545,167 tons. This compares with the total of 454,763 gross tons in 1928. Belgium took the greater part of the 1929 tonnage with 106,076 tons of pig iron. The United States imported 36,401 tons of British pig iron, against 49,213 tons in 1928.

Exports of other iron and steel products from Great Britain in 1929 were 3,834,238 tons, compared with 3,805,699 tons in 1928. Of the 1929 total exports, 711,770 tons of galvanized sheets constituted the largest item, of which 240,117 tons went to India. Next came 579,778 tons of tin and terne plates, this tonnage being pretty well divided among the world's markets. Next in volume came railroad track material, including wheels and axles, the tonnage of which amounted to 486,776 tons, of which the largest item was 108,838 tons of rails, which went to the Argentine Republic, followed by South Africa with 92,903 tons. Merchant steel and sections were exported to the amount of 319,572 tons, the principal buyer being India with 78,057 tons. Exports of wrought iron pipe totaled 317,673 tons, of which 61,928 tons went to Australia. Exports of sheets were 286,974 tons, of which 108,409 tons went to the Argentine Republic, and exports of plates were 198,613 tons, of which 57,226 tons went to Australia.

Imports of pig iron and ferroalloys into Great Britain in 1929 were 147,733 tons, compared with 119,186 tons in 1928. The principal country of origin was France, from which 21,364 tons of basic pig iron were imported, immediately followed by Belgium, which supplied 20,476 tons of forge and foundry pig iron.

Imports of other iron and steel products from Great Britain in 1929 were 2,668,924 tons, compared with 2,778,054 tons in 1928. The principal items imported were semifinished steel products, 572,505 tons, as against 615,753 tons in the preceding year; of this amount, 254,566 tons came from Belgium. Next came 418,540 tons of sheet bars and tin plate bars, of which 366,474 tons came from Belgium. Imports of beams were 141,397 tons, of which 88,153 tons came from Belgium. The following table gives comparative figures, in gross tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron and ferroalloys	Other iron and steel	Pig iron and ferroalloys	Other iron and steel
1926	41,015	270,450	26,105	222,890
1927	50,715	316,455	27,580	322,100
1928	9,935	231,390	37,895	317,210
1929				
Jan.	13,034	231,233	49,408	371,783
Feb.	8,662	151,373	48,609	331,466
March	8,731	173,376	44,701	305,437
April	9,203	252,729	46,718	293,086
May	7,637	249,619	68,141	374,633
June	11,376	222,832	40,884	265,963
July	9,121	228,099	42,289	333,515
Aug.	9,992	245,200	45,078	313,114
Sept.	17,124	211,958	37,461	261,999
Oct.	19,294	229,205	42,727	347,717
Nov.	15,138	235,292	39,486	343,213
Dec.	18,601	237,828	39,665	292,312
Total 1929	147,733	2,668,924	545,167	3,834,238

LuxemburgOutputGrows

Brussels, Jan. 28.—(*European Staff Service*)—The output of pig iron in Luxemburg in 1929 was 2,906,093 tons compared with 2,770,061 tons in 1928, an increase of 4.9 per cent. The December output included 239,332 tons of basic bessemer and 5850 tons of foundry pig iron.

Output of steel ingots and castings in 1929 was 2,702,257 tons, compared with 2,567,079 tons in 1928, an increase of 5.25 per cent. The December output included 214,526 tons of basic bessemer, 873 tons of open-hearth and 1193 tons of electric steel. Comparative figures follow, in metric tons:

Mon. ave.	Furnaces on last day	Pig iron	Steel ingots and castings
1913	....	212,320	111,355
1926	40	209,295	186,980
1927	39	227,710	200,595
1928	38	230,840	214,315
1929	37	242,175	225,605
1929			
Jan.	38	241,639	224,617
Feb.	38	209,207	195,338
March	38	237,039	221,370
April	38	235,077	226,098
May	38	247,863	229,620
June	38	242,020	218,634
July	38	250,260	235,241
August	38	251,496	238,210
Sept.	38	240,269	223,511
Oct.	38	258,595	242,241
Nov.	38	247,396	230,720
Dec.	37	245,182	216,592
Total		2,906,093	2,702,257

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

LINK-BELT LTD., Toronto, Ont., has opened a branch office in the Standard Bank building, 510 West Hastings street, Vancouver, B. C., in charge of Frank B. Wetherill, who has been manager of the Link-Belt Co.'s office at Portland Oreg. The new office is designed to supplement the service of Fleck Bros. Ltd., Canadian Fairbanks-Morse Co. Ltd., and A. R. Williams Machinery Co. Ltd., who will remain as official distributors of Link-Belt chain and other merchandise material. Beside the facilities of the company's plants at Toronto and Elmira, Ont., Mr. Wetherill will have available the facilities of the Pacific division, the nearest shop and warehouse being at Seattle.

* * *

STEFCO STEEL CO. has moved its Tulsa, Okla., district sales offices from the Mayo building to 2033 South Detroit street. Dresser & Gorton Inc., are sales representatives.

* * *

MAXWELL, SPIRO & CO., Jersey City, N. J., steel dealers, have moved offices from 75 to 76 Montgomery street.

* * *

MACHINE TOOL & SUPPLY CO., Tulsa, Okla., has moved from 16 South Lansing street to new and enlarged quarters at Second and Detroit streets. Jack Hammond is manager.

* * *

WEST LEECHBURG STEEL CO., Pittsburgh, has moved its district offices in Chicago from 957 to 1153 Peoples Gas building, 122 South Michigan boulevard.

* * *

AMERICAN STEEL & WIRE CO. has appointed Peter A. Frasse & Co. Inc. as its warehouse distributor of cold rolled strip steel and flat wire at New York, Philadelphia, Hartford, Conn., and Buffalo.

* * *

AUSTIN CO., Cleveland, has opened a branch office at 326 Frelinghuysen avenue, Newark, N. J., to cover the northern New Jersey area. The office will be in charge of R. J. Gannett, regional vice president of the eastern district. Headquarters of the eastern district will remain at 120 Broadway, New York. The company recently completed large construction contracts for the Western Electric Co. and Thomas A. Edison Inc., at Kearney, N. J., Meurer Steel Barrel Co., Newark, N. J., American Oxygen Service, Harrison, N. J. and Emark Battery Corp., Kearney, N. J.

* * *

ROANE IRON CO., Chattanooga, Tenn., with furnaces at Rockwood, Tenn., has re-elected Morrow Chamberlain, president, R. M. Kimball, vice president, and Charles T. Culbert, secretary-treasurer.

* * *

ARMSPEAR MFG. CO., 447 West Fifty-third street, New York, manufacturer of railroad lamps and lanterns, has elected Arthur G. Johnson president, C. K. Freeman assistant to the president and secretary, and J. S. Pixley vice president and treasurer.

* * *

ARTHUR J. HERSCHMANN, 50 Church street, New York, has discontinued his connection with the Limited Works, Czechoslovakia, formerly the Skodaworks, and has taken representation of Witkowitz, another Czechoslovakian producer of steel forgings and castings.

* * *

STANTON IRONWORKS CO. LTD., near Nottingham, Eng., has acquired sole British rights of the victaulic joint for use with cast iron pipe. In connection with the Stanton company's spun pipe a special form of victaulic joint has been designed to obviate use of the housing.

* * *

GERVAIS IRON WORKS, for many years operating at Benton Harbor, Mich., is moving to Chicago where it will have a plant at 3422 Normal avenue, in connection with the Butler Street Foundry Co. Ornamental and miscellaneous building specialties will be produced as in the past. L. L. Gervais is manager.

* * *

PAUL MAEHLER CO., Chicago, recently held its annual sales conference at the Midwest Athletic club. Representatives were present from all sections of its sales area and a broadened sales campaign was discussed in consonance with recently expanded production facilities. The company manufactures ovens and heaters.

* * *

BETHLEHEM STEEL CO. has given a contract to the Electric Machinery Mfg. Co., Minneapolis, for ten 300-horsepower and four 500-horsepower synchronous motors for its plant at Cambria, Pa. The smaller motors will be coupled to gas disintegrators used in washing blast furnace gas and the larger to centrifugal pumps.

* * *

WESTERN MALLEABLES INC., Beaver Dam, Wis., has re-elected officers, as follows: President, A. D. Johnson; vice president, C. A. Starkweather; vice president and general manager, H. L. Kirsh; secretary and treasurer, R. J. Klatt. The company was organized several years ago to take over the foundry of the former Western Malleables Co.

* * *

CONNERSVILLE BLOWER CO. INC., Connersville, Ind., has added the duties of general manager to those of John T. Wilkin, president and chief engineer. Bernard C. O'Brien, formerly in charge of sales at Pittsburgh, has been made secretary; W. E. Newkirk, purchasing agent, becomes treasurer; E. C. Hassler assistant superintendent has been appointed acting superintendent.

* * *

YALE & TOWNE MFG. CO., Stamford, Conn., has equipped a four-story building in connection with its branch at Philadelphia for the manufacture and assembly of Stuebing hand lift trucks and skid platforms. Yale electric industrial trucks will also be sold and serviced from this branch. T. T. Ludlum, formerly in charge of the company's branch at Holyoke, Mass., is in charge of production and R. L. Huggins of sales, assisted by Harald H. Gade and Neil E. McLoughlin. Sales and service will cover eastern Pennsylvania, southern New Jersey, Delaware and Maryland.

* * *

BETHLEHEM STEEL CO. has placed an order with H. A. Brassert & Co., Chicago, for four hot blast stove linings for No. 7 blast furnace

at Johnstown, Pa. The total heating surface of these stoves will be 720,000 square feet, an unusually large area. Four cold blast valves for the stoves have been ordered from the same concern.

* * *

WILLIAM C. ROBINSON & SON CO., Baltimore, has moved its New York office from 136 Charleston street to 288 West street.

* * *

ADVANCE RUMELY CO., LaPorte, Ind., has terminated negotiations for merger with Allis-Chalmers Mfg. Co., Milwaukee, as no basis satisfactory to both companies could be reached.

* * *

MONTREAL LOCOMOTIVE WORKS, Montreal; Que., has been awarded the contract for fenders, electrical equipment and other mechanical apparatus for the Welland canal on its bid of $750,000.

* * *

SLOSS-SHEFFIELD STEEL & IRON CO. has built a new screening plant at its by-product coke works in North Birmingham, Ala. The plant was designed and built by the Semet-Solvay Engineering Co.

* * *

TULSA BOILER & MACHINERY CO., Tulsa, Okla., has opened an engineering office at 443 Commerce Exchange building, Oklahoma City, Okla., for design and erection of oil field power plant equipment.

* * *

BENDIX BRAKE CORP., South Bend, Ind., has bought the Bragg Kliesrath Corp., Long Island City, N. Y., manufacturer of auxiliary braking devices for heavy vehicles. The location and personnel will not be changed for the present.

* * *

JAEGER MACHINE CO., Columbus, O., has elected Lloyd Brown chairman of the board and Gebhard Jaeger president. Mr. Brown formerly was president of the Lakewood Engineering Co., Cleveland, which has been merged with the Jaeger company.

* * *

UNION CARBIDE & CARBON CORP. has bought the 16-story office building at 300 Madison avenue, at Forty-first street, New York, completing ownership of the entire block on Madison avenue between Forty-first and Forty-second streets.

* * *

LOUIS HOFFMANN CO., 279-281 Pittsburgh avenue, Milwaukee, manufacturer of sheet metal products, has incorporated its business under the same name. Capital stock consists of 2000 common shares without par value. Louis Hoffmann and his sons, Edward and Angelo Hoffmann, are the owners of the business and identified with its active management.

* * *

UNION WIRE DIE CORP., New York, has opened a branch factory in the Century building, Pittsburgh, and will employ 200 persons. The company has branches in Hamilton, Ont., and Paris, France, with main offices in New York.

* * *

WASHBURN CO., Worcester, Mass., has bought the business of the wire goods branch, Clinton, Mass., of the Wickwire-Spencer Steel Corp. The plant employs 150 hands. It will be moved to Worcester and consolidated with the Washburn plant here.

* * *

JOSEPH T. RYERSON & SON. INC., which recently bought the Penn-Jersey Steel Co., has vacated the plant at Camden and established headquarters and warehouse stocks at Fifty-second and Grays avenue, Philadelphia in the former plant of the Tioga Steel & Iron Co.

* * *

BORG-WARNER CORP., Chicago, has organized a subsidiary, the Borg-Warner Service Parts Co., which has taken over five warehouses for the distribution of its replacement parts for automotive use. The companies thus taken over are Warner Gear Eastern Co., New York; Warner Gear Central Co., Chicago; C. G. Gardner Co. Inc., Atlanta, Ga.; Warner Gear Texas Co., Dallas, Tex.; Warner Gear Pacific Co., Oakland, Calif.

* * *

GENERAL AUTOMATIC LOCK NUT CORP. is locating in a new factory at Lebanon, Pa., in charge of S. C. Dickerhoff Jr., general superintendent. Mr. Dickerhoff will also have supervising charge of the New York sales office, General Motors building, that city. This company has laboratories and experimental plant at Arlington, N. J., which will be continued. The firm manufactures a patented lock for nuts and the expansion move to Pennsylvania was prompted by desire to be nearer source of nut supply.

* * *

WHITE ROCK SILICA CO., Browntown, Wis., controlled by the W. J. Newmann Co., Chicago, has started work on the development of its plant at a cost of about $150,000. Two units will be added to the present three-unit mill. Shipments of refined silica are now being made at the rate of two cars a day, and the capacity will be doubled by the improvements. Instead of producing silica for glass-making the concern produces only manufactured products. Sand in a part of the hill area heretofore regarded as valueless has been found suitable for foundry use and shipments are about to begin with the installation of handling and loading facilities. J. J. Gault of Chicago is directing developments.

Taylor and Farrell Will Inspect Tennessee

Birmingham, Ala., Feb. 11.—Myron C. Taylor, chairman of the finance committee and James A. Farrell, president, of the United States Steel Corp., will inspect the properties of the Tennessee Coal, Iron & Railroad Co. in the Birmingham district Feb. 17-18. These executives will be accompanied on the tour of inspection by D. G. Kerr, John Hulst and I. Lamont Hughes, vice-presidents of the United States Steel Corp. H. C. Ryding, new president of the Tennessee company, will show the executives about. George Gordon Crawford, who recently resigned the presidency of the Tennessee company to become president of the Jones & Laughlin Steel Corp., Pittsburgh, who went to his new post this week, will return to Birmingham to be with Messrs. Taylor and Farrell.

$500,000 for Allegheny Improvements

Pittsburgh, Feb. 11. — Allegheny Steel Co. will spend $500,000 on general improvement of plants this year, according to H. E. Sheldon, president. In 1929 a total of $1,500,000 was expended at the works at Brackenridge and Tarentum, Pa., a considerable portion of which was spent on the properties of the West Penn Steel Co., acquired last year.

Tonnage production of Allegheny Steel in 1929 constituted a new high record in the company's history. The company's production of chrome nickel and stainless chrome steels currently is double that of last August. A gain of 30.5 per cent in January output compared with December is reported. Much of the gain is attributed to use of this material by the Ford Motor Co., whose requirements are credited with representing about 30 per cent of the industry's total output.

Near the close of the sixteenth century there was introduced into England an invention for slitting flattened bars of iron into strips called nail rods.

Obituaries

FRED M. KIMBALL, advisory manager of the motor division, industrial department of the General Electric Co., Lynn, Mass., died Feb. 5, in Lynn, following a lengthy illness. He was born in Barton, Vt., July 7, 1861, and received his education in Massachusetts, including a course in electrical engineering at Massachusetts Institute of Technology. He was early associated with the Merchants Electric Light Co., Boston, the American Electric Illuminating Co. and the Electrical Development & Mfg. Co. In 1886 he established a business partnership specializing in the manufacture and sale of isolated lighting plants, motors and electrical specialties. In 1891 he entered the employ of the General Electric Co., New England district, and in 1898 was made manager of the small motor department at its formation.

* * *

Sten Agri, 27, manager sales department at Seattle of the Hellefors Steel Corp. of Sweden, died in Seattle Jan. 23.

* * *

George Edward Howard, 46, retired eastern representative of the Flannery Bolt Co., Pittsburgh, died Feb. 2 in Short Hills, N. J.

* * *

George H. Mueller, 51, sales manager of the concrete mixer department of the Koehring Co., Milwaukee, died suddenly, Feb. 4.

* * *

Francis J. Oliver, 68, president Oliver Bros. Inc., 71 Murray street, Hackensack, N. J., steel exporter, died recently in that city.

* * *

Robert Reed Turner, 23, sales representative at Milwaukee of the Steel Sales Corp., Chicago, died at Milwaukee recently.

* * *

Byron E. Veatch, vice president of the Bell Lock Co., Chicago, died rerecently. He had been active with that company for many years.

* * *

William L. Hirsch, 71, for many years Pittsburgh sales agent for the American Steel & Wire Co., died in that city Feb. 7. He entered the employ of the Shoenberger Steel Co. as a boy and at the time of its absorption by the United States Steel Corp. in 1899 was secretary of the company. At that time he joined the American Steel & Wire Co. as sales agent, continuing in that capacity until his retirement in 1923.

* * *

George N. Clemson, 75, saw manufacturer and inventor, died at Middletown, N. Y., Jan. 30. He was born at Montvale, Mass., and located in Middletown 70 years ago.

* * *

William Deutsche, 60, distributor of iron and steel products at Minneapolis, died at his home in that city Jan. 25. He was born in Chicago but located in Minneapolis several years ago.

* * *

John W. Jiles, 67, president of the James Jiles Sand Co., Pittsburgh, died Feb. 9 in that city. The company, founded by his father in 1864, handles molding sand for foundry use.

* * *

Louis Spoeneman, 45, treasurer of the Enterprise Foundry Co., Belleville, Ill., died suddenly in St. Louis, Feb. 3. Mr. Spoeneman was a member of a pioneer family of Belleville iron founders.

* * *

William F. Costello, president of the Mayville Iron Co., Mayville, Wis., a pioneer mining and blast furnace concern, died Feb. 4 from a heart attack. He was born in Ohio in 1881 and had lived in Mayville for the past 20 years.

* * *

Mrs. Elizabeth Drever, 68, who succeeded her husband upon his death five years ago as president of the Tomahawk Steel & Iron Works, Tomahawk, Wis., died at Muskegon, Mich., on Jan. 29.

* * *

Edward O. J. Wallace, treasurer of the Mississippi Valley Iron Co., St. Louis, died at his home in that city recently as a result of carbon monoxide poisoning. Mr. Wallace had been connected with the iron company for 13 years.

* * *

Carlton Schwab Wagner, 36, former owner of the Danville Structural Steel Co., died suddenly, Feb. 6, at Danville, Pa. He was a nephew of Charles M. Schwab. Mr. Wagner was graduated from Lehigh university in 1915, and in 1916 he became connected with the Danville Structural Steel Co., of which he later became sole owner. Recently the Danville company was made an operating unit of the Steelton plant of the Bethlehem Steel Co.

* * *

Mettitt N. Willits Jr., director of the Belmont Iron Works, Philadelphia, died at his home in that city, Feb. 5. Mr. Willits was vice president of the Corn Exchange Bank & Trust Co. and a director of a number of industrial companies.

Men of Industry

(*Concluded from Page* 94)

perial Steel Works, Sheffield, England, and has retired from active business after a service of 40 years. He was born in 1843 and was educated at Dr. Bruce's school in Newcastle. After service with railways and newspapers, in 1866 he became affiliated with the Titanic Steel & Iron Co., in the Forest of Dean, as secretary and was in close touch with Robert F. Mushet, the inventor of a self-hardening tool steel and patentee of numerous metallurgical processes. In September, 1871, Mr. Woodward joined Samuel Osborn & Co., Sheffield, continuing until he went into partnership with Edgar Allen in 1890.

* * *

Elmer G. Knapp, for four years assistant purchasing agent, General Railway Signal Co., Rochester, N. Y., has been appointed purchasing agent, to succeed Harry C. Frey, who was made assistant to the vice president, F. W. Moffett. Mr. Frey entered his railroad career 43 years ago in the freight department of the Lehigh Valley, Bethlehem, Pa. He has been connected with the General Railroad Signal Co. in charge of purchasing for 25 years. Previously he was with the National Switch & Signal Co., Union Switch & Signal Co., and the Pneumatic Signal Co.

* * *

Thomas M. Jewell, merchant mill superintendent, Wisconsin Steel Co., Chicago, has resigned from active service. He had been with the company 28 years. E. A. Jenkins, assistant superintendent, has been made superintendent to succeed him.

CONSTRUCTION *and* ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

BOSTON—Twenty-sixth division air service, Boston airport, will build a hangar project to cost $150,000 and to include machine and engine repair shop, pending outcome of appropriation bill in state legislature.

WEST SPRINGFIELD, MASS.—New England Smelting Works Inc. has started work on plant recently damaged by fire. Equipment will be needed.

BURLINGTON, N. J.—United States Pipe & Foundry Co. has awarded contract for a 3-story, 30 x 60-foot office and laboratory addition.

HOBOKEN, N. J.—Montauk Equipment Co. has leased space at 1021 Grand street for the manufacture of electrical specialties.

NEWARK, N. J.—Berry Electric Service Co. has leased a building at 43 William street for the manufacture of electrical supplies.

NEWARK, N. J.—Gilby Wire Co., 122 Riverside avenue, has completed a 2-story addition and will install equipment for the production of fine wires and mesh.

BRISTOL, PA.—S. Jackson & Son, makers of railroad fuses, 1112 South Fifteenth street, Philadelphia, plan a manufacturing building and boiler house here.

BRISTOL, PA.—Rohm & Haas, manufacturers of chemicals, have received a permit to erect a laboratory building. W. W. Potter, Real Estate Trust building, Philadelphia, is architect.

EASTON, PA.—Lafayette college, care F. M. Lewis, president, is having plans drawn for a power and heating plant here. L. T. Klauder, Bankers' Trust building, Philadelphia, is engineer. Cost will be approximately $100,000.

PHILADELPHIA—Delaware Valley Forge Co. 3-story plant at 2300 East Tioga street, was recently damaged by fire.

PHILADELPHIA—Barrett Co., maker of roofing materials, 3600 Gray's Ferry avenue, plans 2 and 3-story plant and building to replace recent fire damage.

PHILADELPHIA—J. Pfeifer has been granted a building permit for a garage and repair shop at 1954-56 North Eleventh street. L. Miller, 1626 North Twelfth street, has the contract.

PHILADELPHIA—Building permit has been granted to Wintz Bros., contractors, 1618 Sellers street, for a manufacturing addition to plant of Linear Packing & Rubber Co., maker of sheet and piston packings, on State road, north of Levick street. Cost is estimated at $20,000.

PHILADELPHIA—New plant for Ford & Kendig, sheet metal workers, 1428 Callowhill street, will be between Fifty-fourth and Fifty-sixth streets at Lindbergh boulevard. It will involve an outlay of $750,000 and included will be a pipe fabricating unit and a machine shop. (Noted Feb. 6.)

PITTSBURGH—Duquesne university is having plans prepared for a science building, Vickroy and Locust streets. Link, Weber & Bowers, North Craig street and Baum boulevard, are architects.

SCOTTDALE, PA.—Scottdale Machine, Foundry & Construction Co. will enlarge plant with an addition that will double capacity and production. Plant will be steel structural building, 50 x 100 feet, and work will begin at once.

TROY, PA.—Troy Engine & Machine Co., Land Title building, Philadelphia, plan a plant alteration and addition here. Plans are being revised by W. E. S. Dyer, engineer, Land Title building, Philadelphia.

PROVIDENCE, R. I.—A. S. Aharahonian, manufacturing jeweler, 151 Lester street, will build a 2-story plant, 65 x 82 feet, and grinding and polishing tools will be needed.

PROVIDENCE, R. I.—Mays Mfg. Co., maker of metal specialties, 80 Clifford street, will purchase some machine tools in connection with a 1-story plant to be built.

BRATTLEBORO, VT.—Machine shop leased to William Stettman, Arch street and White Stone brook, and owned by Twin State Gas & Electric Co., was damaged by fire recently. Loss is estimated at $80,000.

East Central

CHICAGO—J. C. McKeown, 112 West Adams street, has been granted a permit to build a 50 x 106-foot auto shop addition at 4817 Cottage Grove avenue.

CHICAGO — Barkling Fuel Engineering Co., maker of furnaces, 402 North Paulina street, has been granted a permit for a 1-story, 55 x 66-foot plant addition. Ira C. Saxe, 456 Belden avenue, is architect.

CHICAGO—Advance Machine Co., 4641 Ravenwood avenue, has been granted a permit for a 1-story plant here, 14 x 113 feet, to cost $9000.

CHICAGO—Central Public Service Corp., 105 West Adams street, plans to spend $12,000,000 during 1930 for improvement and maintenance of properties which are located throughout the Middle West, South and New England.

CHICAGO—B. Lavin & Son, producers of ingot brass, 2511 West Twenty-first street, having purchased the former Barton Steel Co. plant at 3426 Kedzie avenue, may do some additional building, which would include a smelter, although expansion plans are awaiting an announcement by the company in about a week.

CHICAGO—Southeastern Illinois Gas Co., subsidiary of Utilities Gas & Electric Co., 22 West Monroe street, plans gas manufacturing and distributing plants at Carmi, El Dorado and Metropolis, Ill. Each will be one story and cost about $100,000.

AUBURN, IND.—Ricke Metal Products Corp., T. P. Riddle managing director, advises that in connection with plant enlargement the following will be among machinery required: Gear presses, drilling machines, milling machine, 16-inch lathes and drill presses, punch presses, shapers, shearers and five electric motors.

BLOOMINGTON, IND.—Board of trustees, Indiana university, will receive bids until Feb. 17 for erection of a chemistry building to cost $519,000. Robert Frost Daggett, 922 Continental Bank building, is architect.

ELKHART, IND.—Time-O-Stat Controls Co. will build a plant addition within the coming 90 days.

EVANSVILLE, IND.—Bucyrus-Erie Co., Decker road, has awarded contract for plant to International Steel & Iron Co., 1243 Edgar street.

KNIGHTSTOWN, IND.—Indiana Soldiers' &

Sailors' orphans home has closed bids for new 1-story power house and equipment to cost $60,000.

LEBANON, IND.—Indestructible Wheel Co. advises that boiler room recently damaged will be repaired about March 1, that extension to warehouse, 50 x 150 feet, will be made, and that new coal elevator and car unloader will be added. (Noted Feb. 6.)

SALEM, IND.—O. P. Link Co., maker of handles, has awarded contract for a 1-story plant to M. Colglaser. Cost is estimated at $50,000.

BATTLE CREEK, MICH.—Clark Tructractor Co., Springfield place, plans addition to include power equipment to plant manufacturing industrial trucks.

DETROIT—J. F. Hasty cooperage shop, 3010 Standish avenue, was recently damaged by fire.

DETROIT—Standard Tube & Mfg. Co., 2435 Scotten avenue, plans a plant at Ferndale, Mich., although architect has not been selected. J. R. Murphy is president.

DETROIT—Michigan Steel Corp., 2400 Union Trust building, announces that a plant expansion involving 30 per cent increase will take place in plant at Ecorse, Mich.

DETROIT—Ford Motor Co., Fordson, Mich., has completed plans through Giffels & Vallett, engineers, 604 Marquette building, Detroit, for revision of power plant facilities at the River Rouge plant.

DURAND, MICH.—Simplicity Engineering Co., manufacturer of gravel screeners, will build a plant addition on South Oak street.

FLINT, MICH.—W. F. Stewart Co. plant, manufacturer of auto bodies, recently suffered a loss by fire.

GRAND RAPIDS, MICH. — Grand Rapids Brass Co. plant, Front avenue northwest, suffered a small loss by fire recently.

GRAND RAPIDS, MICH.—Hayes Body Corp. is contemplating a 1-story plant addition for stamping metal bodies, but plans have been temporarily held up.

CINCINNATI—Cincinnati Turning & Carving Co., 112 Burrows street, recently suffered damage by fire.

CINCINNATI—Lodder Boat Co., 3711 Beechmont avenue, plans a plant building at Carrell street and the Ohio river.

CINCINNATI—H. Phillips Co., 904 Evans street, sheet metal worker, has awarded contract for a 1-story plant addition to cost approximately $25,000 to Parkway Construction Co., Provident Bank building, and subcontracts will be placed soon.

CLEVELAND—Drop Dies & Forging Co., 3088 East Sixty-third street, will erect a plant addition.

CLEVELAND—Ferro Steel Products Co., 1710 Clarkstone road, will begin immediately on an addition that will double plant capacity. Archibald McLaren is president.

CLEVELAND—Crucible Steel Casting Co., Almira avenue and West Eighty-fourth street, advises that a new melting unit will be added to foundry and storage additions. (Noted Feb. 6.)

CLEVELAND—American Can Co., 1654 East Fortieth street, plans a plant building, although construction has been under consideration for several years and erection awaits better construction conditions.

CLEVELAND—Austin Co., 16112 Euclid avenue, advises that welding equipment will be purchased for new fabricating plant to be erected on Chardon road. (Noted Feb. 6.)

MIDDLETOWN, O.—United Welding Co. has been granted a permit for the erection of a testing shop addition to cost $7000, at Lafayette and Baltimore streets.

HUNTINGTON, W. VA.—West Virginia Foundry & Stove Co. has purchased the Treasure Stove Co., Gallipolis, O., and all physical properties of the latter will be brought here. Ground has been broken for the first of two additional buildings at Fourth avenue and Twenty-fourth street.

APPLETON, WIS.—Frank Appleton, county highway commission, is receiving bids for a 1-story, 50 x 108 feet building for the present county garage and maintenance building for highway machinery.

EAU CLAIRE, WIS.—City, care O. E. Oien, clerk, advises that new filtration plant, engineers for which are Alvord, Burdick & Howson, 8 South Dearborn street, Chicago, will include iron and manganese removal units. (Noted Feb. 6.)

MILWAUKEE — General Bronze Corp., 1655 Booth street, fromerly known as the Wisconsin Ornamental Iron & Bronze Co., will erect a 150 x 250-foot fabricating plant and a foundry, 100 x 200 feet. E. A. Ernst is general manager.

SOUTH MILWAUKEE, WIS.—Line Material Co., manufacturer of electric transmission line equipment, plans a 3-story, 60 x 120-foot addition to main plant at Twelfth and Madison avenue. W. D. Kyle is president.

WAUKESHA, WIS.—Pioneer Foundry Co., having sold former site and building, will possibly erect a foundry on another site.

Southern States

TEXARKANA, ARK.—City Airport commission, care C. S. Nancarrow, mayor, has preliminary plans for improving airport buildings.

TAMPA, FLA.—City will purchase airport equipment including hangars, fencing, operating facilities and machine shop.

ROME, GA.—Shops were recently burned of Foundation school of the Berry school.

SAVANNAH, GA.—City proposes erection of a hydroelectric plant costing $6,000,000.

DE QUINCY, LA.—Acme Products Co. proposes electric power equipment with planned expansion of turpentine plant.

NEW ORLEANS—Economy Iron Works Inc., 643 South Peters street, is increasing floor space to care for marine repair and sheet metal business. P. S. Barbalich is president.

SHREVEPORT, LA.—City council has voted to acquire Free State plantation property in Agurs subdivision as site for municipal airport. Selection of architect and engineer will be made soon.

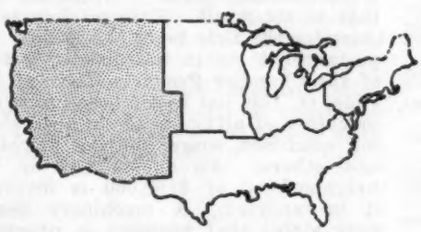
TULSA, OKLA.—National Tank Co. is building a tank fabricating plant addition that will be 50 x 100 feet.

TULSA, OKLA.—Patterson Steel Co., 801 North Xanthun street, will build a 2-story addition to office and engineering departments. Plant will be 44 x 88 feet.

EL PASO, TEX.—American Smelting & Refining Co. plans plant improvements to cost about $100,000. B. N. Rickard is general manager of local plant.

HOUSTON, TEX.—Sabine Supply Co. will build a warehouse and office building, 50 x 200 feet, at Navigation boulevard and Englke street.

PAMPA, TEX.—Petroleum Refractionating Corp., W. T. Waggoner building, will build a refinery here. Dan Dancinger is president.



Western States

CHRISTMAS, ARIZ.—Christmas Copper Co. has sketches for addition to power plant, including new machinery and equipment. H. A. Russell is manager.

NORTH SACRAMENTO, CALIF.—Tucker-Gilmore Mfg. Co. is planning construction of a plant addition to cost approximately $20,000.

SAN FRANCISCO, CALIF.—Treasury department, office of supervising architect, Washington, will receive bids until Feb. 25 for furnishing and installing elevator plant at United States Marine hospital here.

FT. MORGAN, COLO.—City, care Paul G. Williams clerk, contemplates a power plant enlargement to cost about $65,000.

HEREFORD, COLO. — City electric power plant was recently damaged by fire.

OGDEN, UTAH—American Can Co. of Utah has been granted a permit for plant construction at Lincoln avenue and Twentieth street. Cost will be about $30,000. J. G. Leonard is manager. (Noted Dec. 19.)

MARYSVILLE, WASH.—City will open bids about Feb. 17 for improvements to the water

(*Continued on Page* 103)

Machinery

Eastern Railroad Releases Inquiry for 16 Tools—Russians To Spend $5,000,000 More on Machinery for Rehabilitation Work

DELAWARE, LACKAWANNA & WESTERN railroad has issued an inquiry for 16 various types of tools for its Scranton, Pa., shops, according to New York advices. This represents probably the first list of any consequence from a railroad in the East this year. Improvement in awards and inquiry appears general throughout the chief machine tool districts although spottiness and dullness crops up in some lines. A group of Russian delegates arrived last week in New York with authorization to purchase machinery amounting to $5,000,000. Implement and tractor plants are girding for active spring and summer months. Westinghouse Electric & Mfg. Co. has abandoned the policy of issuing quarterly lists. Crane business is slow.

New York, Feb. 11.—Delaware, Lackawanna & Western railroad has issued an inquiry for 16 tools for its Scranton shops, the first sizable list from a railroad in the East this year. Slight improvement in buying is reported by several dealers. Demand for equipment is generally spotty; inquiry is fair and well spread. Figures are in on a fair volume. Boring machinery is still slow on delivery, one builder being unable to do better than 13 weeks. On standard equipment, however, most lines are about normal. Grinding machinery is slightly more active and inquiry has also increased.

Inquiry for electric overhead cranes also is heavier, the usual early-in-the-year increase being noted. Locomotive cranes are not active. Erie railroad placed two 25-ton eight-wheel steam driven locomotive cranes with the Orton Crane & Shovel Co.

The Lackawanna list includes:

One four-speed sensitive drill with ¾-inch drilling capacity.

Hexagon turret lathe for 3-inch bar stock with all standard equipment for bar stock, including automatic chuck.

Plain radial drill, 7-inch capacity.

Toolroom lathe, 6 x 12-foot bed.

Turret lathe for finishing brass castings; motor and control equipment to be applied by purchaser.

Brass turret lathe, 6 x 18-foot bed, all-geared head, taper attachment for finishing brass castings.

Geared-head engine lathe with extra spindle speeds for boring and finishing brass castings.

High-speed lathe, 5 x 12-foot bed, spindle speeds for turning and boring brass castings.

Pipe threading and cutting off machine, ½ to 2-inch capacity, motor and control equipment to be applied by purchaser.

Floor grinder with 16-inch diameter by 2-inch taper face grinding wheels, 1¼-inch bore.

Pneumatic jolting and rollover machine controlled by compressed air.

Quick-change geared-head screw-cutting engine lathe, taper attachment.

Double combination punch and shear, 15-inch throats, arranged so each side of machine may be operated independently.

Arbor press to take 26-inch diameter work, length of rack or ram 24 inches.

Tool grinding machine with capacity for grinding ⅝-inch to 1⅝-inch diameter hot-twisted spiral-fluted bridge reamers and nut taps.

Pittsburgh, Feb. 11.—Machine tool awards show some improvement but still are only slightly better than a month ago. Inquiry is holding in fair volume and is exceeding the rate of awards, leaving considerable pending business. Practically all awards and inquiry are confined to several tools at a time, but such business is well distributed. Westinghouse Electric & Mfg. Co., which recently abandoned the practice of issuing quarterly lists, has a number of tools up for early placement and recently awarded several items. Railroad inquiry still is light, although equipment is expected to be placed some time this year by the Pennsylvania railroad for its Altoona, Pa., shops. Crane awards are light and although considerable equipment is pending, closing is slow.

Worcester, Mass., Feb. 11.—Dullness still characterizes the machinery market, although grinders are reported as having a good volume of business in January. Much interest is being manifested in another Russian delegation which arrived in New York last week with commissions to buy American machinery of all kinds to the extent of $5,000,000 for the rehabilitation of the Soviet. Lathes and drills are spotty. Textiles are weak. Associated lines report demand slow.

Cleveland, Feb. 11.—Conditions with machinery dealers remain about the same, some expressing the sentiment that sales are better than they had hoped for; others still waiting for the middle of March which has been set as the date for an encouraging increase in business. Automotive contracting is hardly stirring in this territory. Peerless is largely an assembly job and therefore requires few tools. Jordan, with a schedule of about 10 cars per week, at present is turning out about 4; hence not much of an outlet for machinery exists there. The Hupp-Chandler plant is operating and that is about all. Railroad buying is quiet for the time being. The only important list out in the district is that of the Chandler Products Corp. at Euclide, O. This list is composed of screw machines of all types, screw head shaving machines, screw slotting machines and others. An expenditure in the neighborhood of $100,000 is involved, it is reported. A machinery dealer here states that business is progressing at about the rate of Dec. 15, which is not too good.

Chicago, Feb. 11.—Machine tool orders are picking up gradually and the more spirited inquiries of the past few weeks are being well maintained. Considerable important railroad and industrial inquiry is before the market, and although first quarter billings may be expected to be much below last year, it is indicated that the closing of business now outstanding may result in a favorable showing as far as sales are concerned. Contemplated plans of International Harvester Co. lead among the implement and tractor plants, but it is known that several others will be in the market during the spring and summer months. Oliver Power Equipment Co. has lists prepared for both South Bend, Ind., and Charles City, Ia., plants. Chicago & North Western railroad is inquiring for an 800-ton 96-inch wheel press, while bids have been received for a toolroom lathe for the Rock Island. Machine tool builders are abreast of orders and deliveries are more nearly normal than for some months.

Scullin Earns More

St. Louis, Feb. 11.—The Scullin Steel Co. in 1929 earned net profits of $338,106 after interest charges and taxes, equal to $3.38 per share on the outstanding 100,000 shares of preference stock, against $138,399, or $1.38, in 1928, according to the statement just issued.

The statement reflects the increased orders for the company's foundry department, resulting from better railroad equipment buying. The company started the new year with more orders on hand than at any time in its history with indications of the full year of 1930 showing up better than 1929, as heavy railroad orders reflected only the last two and a half months of 1929.

Honor Crawford, Ryding

Birmingham, Ala., Feb. 11.—The Birmingham chamber of commerce last week tendered a dinner in compliment to George Gordon Crawford, retiring president of the Tennessee Coal, Iron & Railroad Co., and H. C. Ryding, new president of the company. It was one of the most representative gatherings held in Birmingham in years. A loving cup was presented Mr. Crawford who becomes president of the Jones & Laughlin Steel Corp.

J. E. Hansen, research engineer, Ferro Enameling Co., Cleveland, presented three lectures at the University of Illinois, Urbana, Ill., Jan. 31, in connection with a short course in ceramics. The lectures by Mr. Hansen were upon the subjects of "Wet Process Vitreous Enamel Application," "Wet Process Vitreous Enamel Calculations" and "Correct Methods for Firing Vitreous Enameled Parts."

Construction and Enterprise

(*Continued from Page* 101)

system. Plans have been prepared by W. C. Morse Co., Alaska building, Seattle.

SAND POINT, WASH.—Navy department, Washington, will open bids Feb. 26 for construction of several units, including a shop building, at naval air station here.

SEATTLE—Bureau of Yards & Docks, navy department, Washington, will receive bids until Feb. 26 for shop building here.

SEATTLE—Washington Liquid Gas Co., 4774 East Marginal way, will improve plant with expenditure totaling $80,000.

SHELTON, WASH.—Machine shop of Ulery & Lee, 124 First street, has been opened.

West Central

WINTERSET, IOWA—City has plans prepared for extensions and improvements to the municipal power plant. Engineers are Burns & McDonnell Engineering Co., 400 Interstate building, Kansas City, Mo.

MINNEAPOLIS—Northeastern Metal Ware plant, 1401 Central avenue, was damaged by fire recently.

ST. PAUL—Harris Bros. machinery plant, 501 Thirteenth street, was damaged by fire recently.

FERGUSON, MO.—Universal Match Co., recently damaged by fire, will rebuild and power plant reconstruction is planned.

ST. LOUIS — Koken Companies, Inc., 3400 Morganford road, manufacturer of metal chairs and metal products, has awarded contract for a 1-story addition, 80 x 100 feet, to cost with equipment about $40,000.

LINCOLN, NEBR.—University of Nebraska, care A. Burnett, board of regents, is having preliminary plans drawn for an engineering building to cost about $300,000.

Canada

BELLA COOLA, B. C. — British Columbia Canning & Packing Co. plant here was recently damaged by fire.

LONDON, ONT.—Utilities commission, E. V. Buchanan, general manager, will close bids Feb. 15 on three large transformers. Other electrical equipment is to be purchased.

PORT ARTHUR, ONT.—Plant of Bohn Auto Repair Co. was recently damaged by fire.

PORT ARTHUR, ONT.—Hydroelectric Power commission of Ontario, 190 University avenue, Toronto, Ont., plans hydroelectric plant on Nipigon river near here. Cost will be about $5,000,000.

SMITH'S FALLS, ONT.—Frost & Wood Co. Ltd., manufacturer of harvester combines, has awarded general contract for plant here to John Davidson.

ST. FELICIEN, QUE.—Hangars and equipment belonging to Curtiss-Reid Aircraft Co. Ltd. were recently damaged by fire and will be replaced by owner.

ST. JOHNS, QUE.—Canadian Potteries Ltd., maker of bathroom fixtures and fittings, is having plans prepared by Ross & Macdonald, 1 Belmont street, Montreal, Que., for a 1-story plant here costing approximately $400,000.

ST. HYACINTHE, QUE.—Goodyear Cotton Co. of Canada Ltd., Toronto, Ont., proposes to build a 4-story plant addition on Delorme street here, costing about $600,000.

Recent Incorporations

WILMINGTON, DEL.—Cleveland Production Co. has been incorporated here temporarily with $1,000,000 and 2000 no par shares to own and operate foundries and machine shops by the Corporate Trust Co. of America, Fidelity Philadelphia building, Philadelphia.

BLOOMINGTON, ILL.—Service Stamping Co., 701 East Lincoln street, has been incorporated with $4500 preferred and $35,000 capital stock to deal in metal stampings by Charles I. Will.

CHICAGO—Illinois Orna-Metals Co. has been incorporated with $30,000 to deal in ornamental metal work by John A. Cervenka Jr., 77 West Washington street.

CHICAGO—Kuklin Construction Co., 3741 Sunnyside avenue, has been incorporated with $30,000 to engage in the general contracting business by Brown, Fox and Blumberg, suite 3059 Continental Illinois Bank building.

CHICAGO—Modern Electrical Products Corp., 9-11 West Illinois street, has been incorporated with $20,000 capital to engage in a general electric manufacturing business by Urion, Drucker, Reichmann & Boutell, 134 South LaSalle street.

DECATUR, ILL. — Gallivan Engine Ring Works Inc. has been incorporated with $100,000 preferred stock and 10,500 no par shares to engage in general manufacturing business by D. J. Gallivan, 617 East Green street, Champaign, Ill.

LEXINGTON, KY.—Wilson Machinery & Supply Co. has been incorporated with $150,000 capital by Tilford L. Wilson, 1134 Fontaine road.

SHREVEPORT, LA.—Shreveport Armature and Machine Works has been incorporated with $10,000 capital by R. A. Oliver, president, 5900 Fairfield avenue.

BOSTON—Harvey Sales & Service Co. has been incorporated with 5000 no par shares to manufacture brakes, carburetors, shock absorbers and all parts and equpiment used in connection with engines and motor vehicles. Daniel C. Harvey, 41 Wessex road, Newton Center, Mass., is president.

EAST BOSTON, MASS.—Pigeon Boat Co., 135 Coleridge street, has been incorporated with 1000 no par shares to build seacraft, engines, all equipment tools and appliances. Fred L. Pigeon, 58 East White street, is president.

NORTH ATTLEBOROUGH, MASS.—Straker & Freeman Inc. has been incorporated with 600 no par shares to manufacture tools, dies, machinery and metal products. Verne M. Calkins, 54 Ferncrest avenue, Edgewood, R. I., is president.

WALTHAM, MASS.—Camman Mfg. Co. Inc. has been incorporated with 5000 no par shares to manufacture household appliances, supplies, equipment, machinery and tools by Carl A. Person, president, 81 South Main street, Randolph, Mass.

ADRIAN, MICH.—Bassett Foundry Co. has been incorporated with $5000 capital to make ferrous and nonferrous castings.

DETROIT—American Eagle Specialty Co. has been incorporated with $10,000 to manufacture automobile radiator caps by S. D. Tyler, 329 Elmhurst avenue.

DETROIT—Snyder Tool & Engineering Co., 3400 East Lafayette avenue, has been incorporated with 5000 no par shares to engage in machine, tool, die and stamp work.

WAYNE, MICH.—Corman Aircraft Corp. of Michigan has been incorporated with $10,000 to manufacture and deal in airplanes, dirigibles and all types of aircraft by Hayden Hodges, 929 Foster street, Chicago.

ST. LOUIS—American School of Welding has been incorporated with $50,000 by W. D. Patterson, 3031 Locust boulevard.

JERSEY CITY, N. J.—Willow Metal Radiator Cabinet Co. has been incorporated with 1000 common shares to manufacture metal radiator covers by Ziegener & Brenner, attorneys, 75 Montgomery avenue.

NEWARK, N. J.—Remington Tool Co. has been incorporated with $25,000 capital to manufacture tools by F. E. Pellegrin, 20 Clinton street.

TRENTON, N. J.—Surgical Service Co. has been incorporated with $50,000 to manufacture chemicals by Jospeh J. Felcone, lawyer, Broad street, Trenton, N. J.

NEW YORK—Gotham Pressed Steel Corp. has been incorporated with $75,000 preferred stock and 100 shares of common to manufacture metal toys by Olcott, Olcott & Glass, 170 Broadway.

NEW YORK—Esel Products Mfg. Co. has been incorporated with $10,000 preferred and

100 shares of common stock to manufacture toys by Paley & Posner, 1440 Broadway.

NEWARK, N. J.—Chemical Laboratories of America has been incorporated with $200,000 preferred and 2000 shares of common stock to manufacture chemicals by William Harris, attorney, 790 Broad street.

UNION CITY, N. J.—Schwerdt Mfg. Co. has been incorporated with 300 shares of common stock to manufacture toys by M. Van Winkle, attorney, 1 Exchange place, Jersey City, N. J.

CLEVELAND—Superior Wrought Washer Co. has been incorporated with 200 no par shares to manufacture washers by William Handy, 1473 Detroit avenue.

MIDDLETOWN, O.—Middletown Electric Mfg. Co. has been incorporated with 280 no par shares by J. W. Holman and A. X. Schwebel.

NEW WASHINGTON, O.—Modern Metal Mfg. Co. has been incorporated with $10,000 capital by J. H. Donaldson.

NEVILLE, PA.—Witherow Die Rolling Corp. has been incorporated with 500 no par shares to manufacture iron and steel and metal products by James M. Bovard, University club, Pittsburgh.

PITTSBURGH—Romec Pump Co. has been incorporated with 5000 shares of capital stock to manufacture and deal in pumps, machinery and appliances by Grant D. Bradshaw, 530 Fourth avenue.

Allis-Chalmers Reports High Sales

January sales of Allis-Chalmers Mfg. Co., Milwaukee, exceeded those for any previous January in the company's history by a substantial margin, the company reports. Incoming orders are running well ahead of 1929, and indications are that sales for first quarter will be well in excess of any previous corresponding quarter.

DALLAS, TEX.—Meletio Electrical Supply Co. has been incorporated with $25,000 capital to manufacture electrical specialties by Alex Meletio, 4108 Gaston avenue.

FT. WORTH, TEX.—Home Machine & Mfg. Co. has been incorporated with $27,000 capital to engage in general machine work by Frank Holmes, 1805 Hurley street.

WICHITA FALLS, TEX.—Central Metal Co. has been incorporated with $5000 capital to refine metals by J. Feldman, care American Iron & Metal Co., Dallas, Tex.

COPPER CLIFF, ONT.—American Metals of Canada Ltd. has been incorporated with 1000 no par shares to refine and treat copper and other metals as well as carry on the business of founder and metal manufacturer by Norman E. Strickland, attorney, 123 Rose Park drive, Toronto, Ont.

SAULT STE. MARIE, ONT.—Fitzgerald Laboratories of Canada Ltd. has been incorporated with $50,000 and 10,000 no par shares to act as metallurgist, electrochemist and engineer by John A. McPhail and James M. McNeil.

TORONTO, ONT.—Reversible Brake Equipment Co. has been incorporated with 1,000,000 no par shares to carry on the business of iron master, brass manufacturer, steel maker and steel converter by Kenneth V. Stratton, attorney, 372 Bay street.

MONTREAL, QUE.—Redfern Construction Co. Ltd. has been incorporated with $250,000 capital stock and 25,000 no par shares by James A. Mathewson, lawyer, 275 St. James street.

MONTREAL, QUE.—Henry Ihle of Canada Ltd. has been incorporated with 5000 no par capital shares to act as contractor, mechanical and electrical engineer by Alan A. Magee, attorney, 500 Place d'Armes.

MONTREAL, QUE.—Starr Typewriter Co. of Canada Ltd. has been incorporated to manufacture and deal in typewriters, adding machines, tools and appliances, with $100,000 capital stock, by Gerald A. Coughlin of Westmount, Que.

New Trade Publications

CRANES AND HOISTS—American Hoist & Derrick Co., St. Paul, has issued a booklet of unusual design, illustrating its various products. It is devoted especially to machinery for contracting, road building and aggregate producing.

ELECTRICAL DEVICES—General Electric Co., Schenectady, N. Y., has issued bulletins as follows: Gas-engine-driven arc welder, direct current mill motors, method of determining cost of operating electric appliances and motors. Each is illustrated.

TRAMRAIL—Value of tramrail installations is covered in a bulletin by the Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O. Illustrations touch important uses in efficient handling of materials.

WRAPPING ROLLS—Buffalo Forge Co., Buffalo, illustrates in a current bulletin its line of wrapping rolls for forming metal cylinders by passing sheet and plate metal between its rolls. A table of specifications is included.

MILLING CUTTERS—Four bulletins have been issued by the Pratt & Whitney Co., Hartford, Conn. They deal with shell end mills, taper pin reamers, staggered tooth milling cutters and half-side milling cutters. Each is well illustrated and contains a table of sizes and prices.

FLEXIBLE SHAFTING—S. S. White Dental Mfg. Co., New York, has issued a handbook on its flexible shafting. The process of manufacture is described and illustrated completely. The increasing use of flexible shafting in machine design is suggested as important as that of gears. A chapter is devoted to the various applications of this means of power transmission. The book is a compendium of information on the subject.

TESTING MACHINES—Southwark Foundry & Machine Co., Philadelphia, has issued a catalog of its testing machines, up to 3,000,000 pounds capacity. Details of construction and operation of the various types of testing machines are described and illustrated. Halftones, diagrams and tables of data are included.

WELDING—Austin Co., 120 Broadway, New York, is distributing reprints of one of its advertisements emphasizing its adoption of welded construction for buildings as standard practice, at cost comparable to other methods. Lack of noise is the principal feature stressed in the announcement.

ALLOY STEEL CASTINGS—Safes of cast alloy steel, tested to resist entry for 45 minutes by any means but the cutting torch or explosives, are featured in a bulletin by the Nugent Steel Castings Co., Chicago. Pressures up to 80 tons bent and dented these safes but failed to crack them, as illustrations show.

ARC WELDING—General specifications for structural arc welding form the substance of a bulletin by the Lincoln Electric Co., Cleveland. They serve as a model for those using this form of structural work and cover points necessary for efficient work. This bulletin is part of a series on the subject of arc welding.

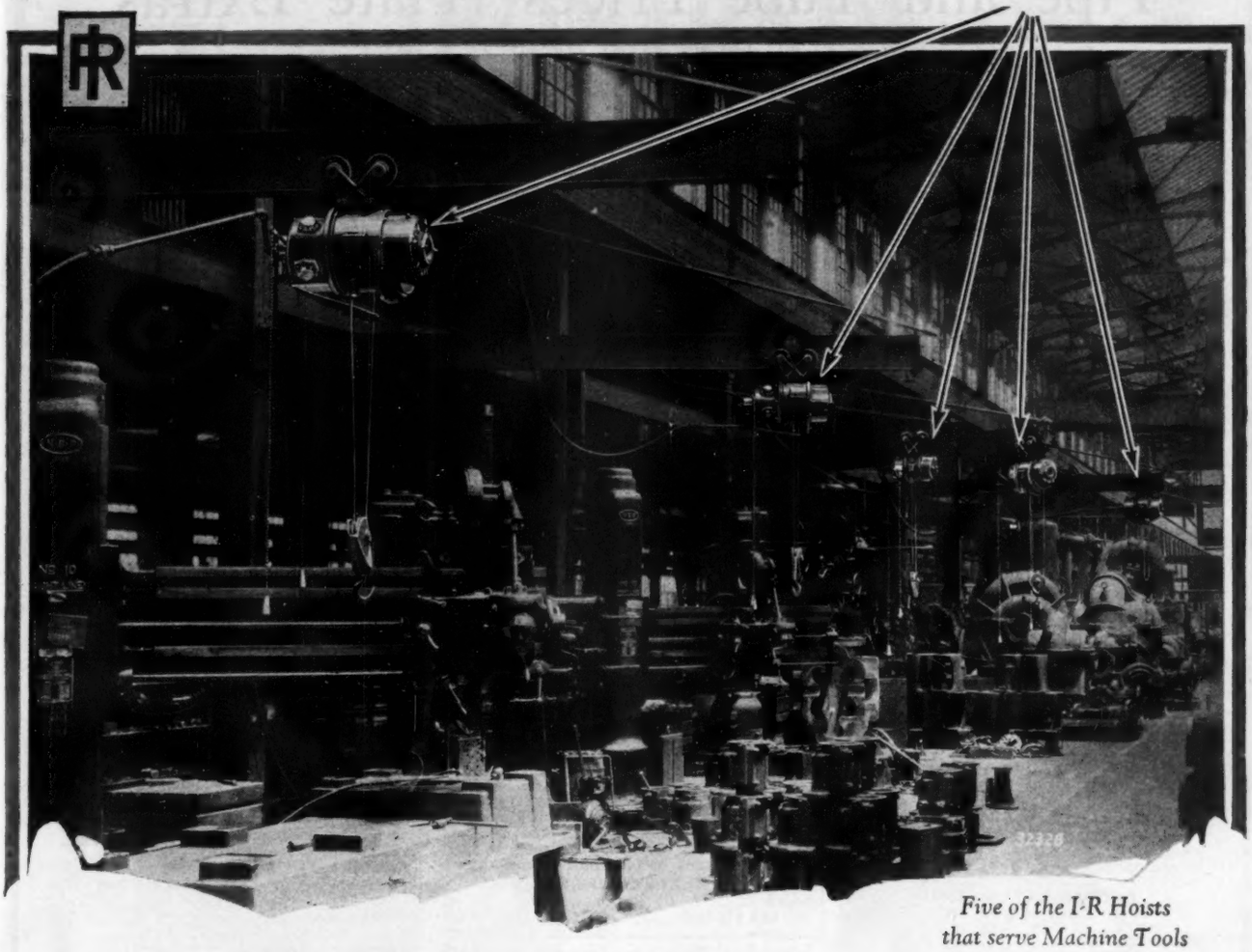
FLEXIBLE COUPLINGS—Morse Chain Co., Ithaca, N. Y., has issued a booklet on its flexible couplings. The general subject is treated from various angles, touching on needs for this type of coupling, savings on bearings and machinery and lower maintenance cost. The principle of the coupling is explained and illustrations show typical installations. Data to guide in selection are given. The booklet also treats speed reducers and power transmission service.

REFRACTORIES—Harbison-Walker Refractories Co., Pittsburgh, is distributing a volume on modern refractory practice, with special reference to its own products. Illustrations show method of manufacture, various shapes of bricks, methods of laying and a number of tables useful in the application of refractories. A set of formulas for calculating brickwork is appended. A glossary of terms commonly used in the refractories industry is of much value.

NICKEL ALLOYS—International Nickel Co. Inc., 67 Wall street, New York, has issued a catalog on the uses of nickel cast iron. Much of the information already has appeared in advertisements in various journals. It has been compiled as a reference booklet for the convenience of foundrymen interested in the use of nickel and chromium in iron mixtures. The booklet is divided into six sections, automotive, aeronautical, general machinery, machine tool, power and instructions.

ARC WELDING—A booklet on arc welding of cast iron has been issued by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. It points out some of the characteristics of cast iron and gives a recommended procedure to be followed in arc welding. Illustrations show characteristics which influence its weldability and several views of cast iron machinery parts repaired by arc welding. In view of economies of welding repair and reclamation of cast iron machinery parts the data here presented are of great interest to users of such equipment.

Five I-R Air Motor Hoists



Five of the I-R Hoists that serve Machine Tools

There are twenty more in this plant

The above illustration shows five of the twenty-five Ingersoll-Rand Air Motor Hoists installed in a large manufacturing plant. Besides handling heavy pieces to the machines, they are used in assembly work and for the general lifting and loading of material.

Ingersoll-Rand hoists give speedy, safe, and trouble-free hoisting service. The accurate control, automatic load brake, safety "up stop" and "down stop," and automatic lubrication are some of the features that appeal to users.

These and other important features of I-R hoists account for their superior service. Why not let us send you complete information?

INGERSOLL-RAND COMPANY - 11 Broadway - New York City

Branches or distributors in principal cities the world over

For Canada Refer—Canadian Ingersoll-Rand Co., Limited, 10 Phillips Square, Montreal, Quebec

452-PT

Ingersoll-Rand

Pipe and Tube Prices—Plate Extras

Steel Pipe

(Base price $200 per ton)

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

To large jobbers these discounts are increased by 1 point and two supplementary discounts of 5 per cent on black, and 1½ points and two supplementary discounts of 5 per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

	Black	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ to 3¾-inch	54 off
4-inch	57 off
4½ to 6-inch	46 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. Over 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	61 off
1¼ and 1½-inch	53 off
1¾-inch	37 off
2 and 2¼-inch	32 off
2½ and 2¾-inch	40 off
3-inch	46 off
3¼ and 3½-inch	48 off
4-inch	51 off
4½, 5 and 6-inch	40 off

SEAMLESS HOT ROLLED

1¾-inch	37 off
2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ and 3½-inch	54 off
4-inch	57 off
4½, 5 and 6-inch	46 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....55 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net price per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inch long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot to but not including 7.65 pounds square foot.... .20c

Plates ordered 7.65 pounds square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, class A-B..	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection ..... No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts (Including straight taper plates) Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c